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# *Opuscula Philolichenum*

*small works in the field of lichenology*

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## MISSION

*Opuscula Philolichenum* is intended to serve as a venue for the publication of small works in the field of lichenology (including lichenicolous fungi and non-lichenized fungi traditionally treated with lichens). The central goal of the journal is to provide timely publication, in a professional format, free of charge to authors and readers. While the journal focuses on topics relating to the lichen biota of North America this is by no means exclusive and manuscripts on other topics will be considered as the table of contents of the present issue clearly illustrates.

Authors wishing to submit a manuscript for publication in *Opuscula Philolichenum* should contact the editor prior to submission to confirm that the paper conforms to the mission of the journal (outlined above). Manuscript submissions should be left unformatted and authors should consult a recent issue of *Opuscula Philolichenum* for style. All submissions are subjected to review by at least two peer reviewers and, following acceptance are formatted by the editor.

## NOTICE FROM THE EDITOR

When this journal began publication ten years ago it was among the first serials to take advantage of the internet when publishing new botanical nomenclatural acts. The journal was conceived as a primarily electronic one, available on-line free of charge (at <http://sweetgum.nybg.org/philolichenum/>), with a limited print run to satisfy the requirements for effective publication established under the *International Code for Botanical Nomenclature*. Since that time we have continued to publish the journal in this manner, printing one or two issues a year, with each issue consisting of between one and two hundred pages.

In 2004 we could not have foreseen the revolutionary changes that took place at the 18<sup>th</sup> International Botanical Congress in Melbourne. There the Nomenclature Section voted to allow electronic only publication of new nomenclatural acts beginning 1 January 2012. In response to this change *Opuscula Philolichenum* no longer produces hardcopy. Although a single printed copy will continue to be deposited in the library of The New York Botanical Garden.

Beginning with volume number 12 of *Opuscula Philolichenum*, manuscripts are published electronically on-line in PDF/A format immediately following the approval of the authors in the post-review proof stage. The PDF issued online is considered to be the final version (= version of record) and the date on which the PDF is posted is considered to be the date of effective publication. In order to aid future workers the date of effective publication for each manuscript is provided in the table of contents. When a new manuscript is published online a record is also simultaneously transmitted to the organizers of *Recent Literature on Lichens* for inclusion in that database.



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## *Sirenophila ovis-atra* a new species of maritime Teloschistaceae from the Southern Hemisphere

ULRIK SØCHTING<sup>1\*</sup>, MAJBRIIT ZEUTHEN SØGAARD<sup>2</sup>, LEOPOLDO G. SANCHO<sup>3</sup>, PATRIK FRÖDÉN<sup>4</sup> & ULF ARUP<sup>5</sup>

**ABSTRACT.** – A new species, *Sirenophila ovis-atra* is described from maritime rocks of southern Patagonia, the Falkland Islands and Macquarie Island, where it grows in the upper part of the black ‘*Verrucaria*-zone’, most often on members of the genus *Hydropunctaria*. It is so far the only known species of *Sirenophila* in South America, a genus that is particularly prominent on the coasts of Australia.

**KEYWORDS.** – *Caloplaca*, Chile, parasitic lichen, maritime zonation, Tierra del Fuego.

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### INTRODUCTION

The lichens of Southern Patagonia have in recent years been studied intensively particularly as part of the Spanish projects ANTCOMPLEX, POLARPIONER and PLANTSUCCESS. The Chilean part of Tierra del Fuego with Navarino Island and the canals and fjords north and south of the Cordillera Darwin were targeted during several sea based expeditions in 2005, 2008, 2009 and 2015. During these expeditions it was possible to study the maritime zones inhabited by lichens, particularly those belonging to the family Teloschistaceae. Rocky shores along cool oceans worldwide are known to display a characteristic zonation of lichen communities (Brodo & Sloan 2005, Fletcher 1980, Söchting et al. 2004) consisting of a lower black *Hydropunctaria* (formerly *Verrucaria*) zone, which upwards in elevation and closer to the land merges into an orange zone dominated by species belonging to Teloschistaceae. In spite of the overall visual similarity between the sea shores of distant continents the species composition differs significantly. Historically all those species with the yellow or orange anthraquinone pigments were placed in the genera *Caloplaca* and *Xanthoria*. However in recent years the delineation of these genera, together with others in the Teloschistaceae, has changed radically as a result of molecular study (see e.g., Arup et al. 2013). While many of the newly circumscribed genera lack discrete morphological synapomorphies, they do display strong phylogeographic patterns (Arup et al. 2013). Most striking is the very high diversity of the genus *Sirenophila* in Australia and New Zealand which contrasts to the presence of a similarly diverse genus *Austroplaca* in South America and Antarctica, meanwhile both genera are absent from coastal rocks of the Northern Hemisphere.

An apparently undescribed species belonging to Teloschistaceae was found growing quite abundantly along the Beagle Chanel in Tierra del Fuego at the very low edge of the orange zone, actually parasitizing the *Hydropunctaria* of the adjacent lower zone. Its affiliation to current Teloschistaceae genera was only possible after subsequent molecular studies that showed it to belong in the genus *Sirenophila*, a genus not previously known from South America. Further studies supported the novelty of the species, which is here described as *S. ovis-atra*.

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Locality	Collection nr.	Herbarium	nrITS	nrLSU	mtSSU
Chile, Navarino I.	<i>Søchting 12295</i>	C	<b>KU578078</b>		
Chile, Navarino I.	<i>Søgaard 90</i>	C	KC179306	KC179250	KC179589
Chile, Navarino I.	<i>Søgaard 91</i>	C	<b>KU578079</b>		
Chile, Navarino I.	<i>Søgaard 106a</i>	C	<b>KU578080</b>		
Chile, Navarino I.	<i>Søchting 10176b</i>	C	<b>KU578081</b>		
Chile, Navarino I.	<i>Søchting 12341</i>	C	<b>KU578082</b>		
Chile, Punta Arenas	<i>Søchting 12386b</i>	C	<b>KU578083</b>		
Chile, Chaitén	<i>Frödén 1616</i>	LD	<b>KU578084</b>		

Table 1. GenBank accession numbers and associated voucher information for sequences of *Sirenophila ovis-atra*. Newly generated sequences from this study in bold.

## MATERIALS AND METHODS

The study is primarily based on material collected by the authors in Tierra del Fuego in southern South America (C, LD), supplemented with collections from Hobart, Australia (HO). In addition the following herbaria have unsuccessfully been screened for possible matches: British Antarctic Survey (BAS), Canberra (CANB), Farlow Herbarium (FH), Michigan State University (MSC). Macroscopic descriptions are based on observations made with a Wild Heerbrugg, M5-53204 dissecting microscope with measurements made using a mounted Nikon DS-Fi1 camera combined with the software NIS-Elements. Sections were made using a Reichert-Jung Cryostat 2800 Frigocut E microtome and viewed using an Olympus BX60 microscope. All measurements were made on material mounted in water. Ascospores were measured outside the asci, with size given as an average with standard deviation, and extremes written in brackets. The thickness of ascospore septa was measured at the outer wall in accordance with Vondrák *et al.* (2013). The number of measurements is indicated in brackets. Paraphysis morphology and measurements were made after soaking for 24 hours in an aquatic solution of Ariel Color <sup>TM</sup> detergent to dissolve lichenin.

The secondary metabolite pattern was identified using HPLC and analysed separately for thallus and apothecia. The relative composition of the secondary compounds was calculated based on absorbance at 270 nm according to Søchting (1997).

ITS sequences of the newly collected specimens were produced according to the procedures described by Arup *et al.* (2013), who had already published sequences of nrITS, nrLSU and mtSSU under the name “sp. 20”. All sequences were submitted to GenBank with the accession numbers indicated in Table 1.

## THE NEW SPECIES

*Sirenophila ovis-atra* Søchting, Søgaard & Sancho sp. nov.  
Mycobank #815606.

FIGURE 1.

DIAGNOSIS. – Thallus granular squamulose, grey, parasitic on *Hydropunctaria* sp. on maritime rocks; apothecia yellow with prominent margin; asci with 8 hyaline, ellipsoid, polardiblastic ascospores, ca. 14 x 7 µm with ca. 6 µm thick septum.

TYPE: **CHILE. XII REGIÓN DE MAGELLANES Y ANTARTICA CHILENA:** Canal Beagle, Seno Holanda, 54.9420°S, 69.1545°W, alt. 2 m, N-exposed overhanging rock, 1 m from the sea, 27.i.2015. *U. Søchting 12295* (C!, holotype; LD!, isotype).

ETYMOLOGY. – *Sirenophila ovis-atra* is named ‘the black sheep’ due to the deviating appearance, growth at the extreme limit of terrestrial habitats, and remote occurrence compared to its attractively orange relatives in Australia and New Zealand.



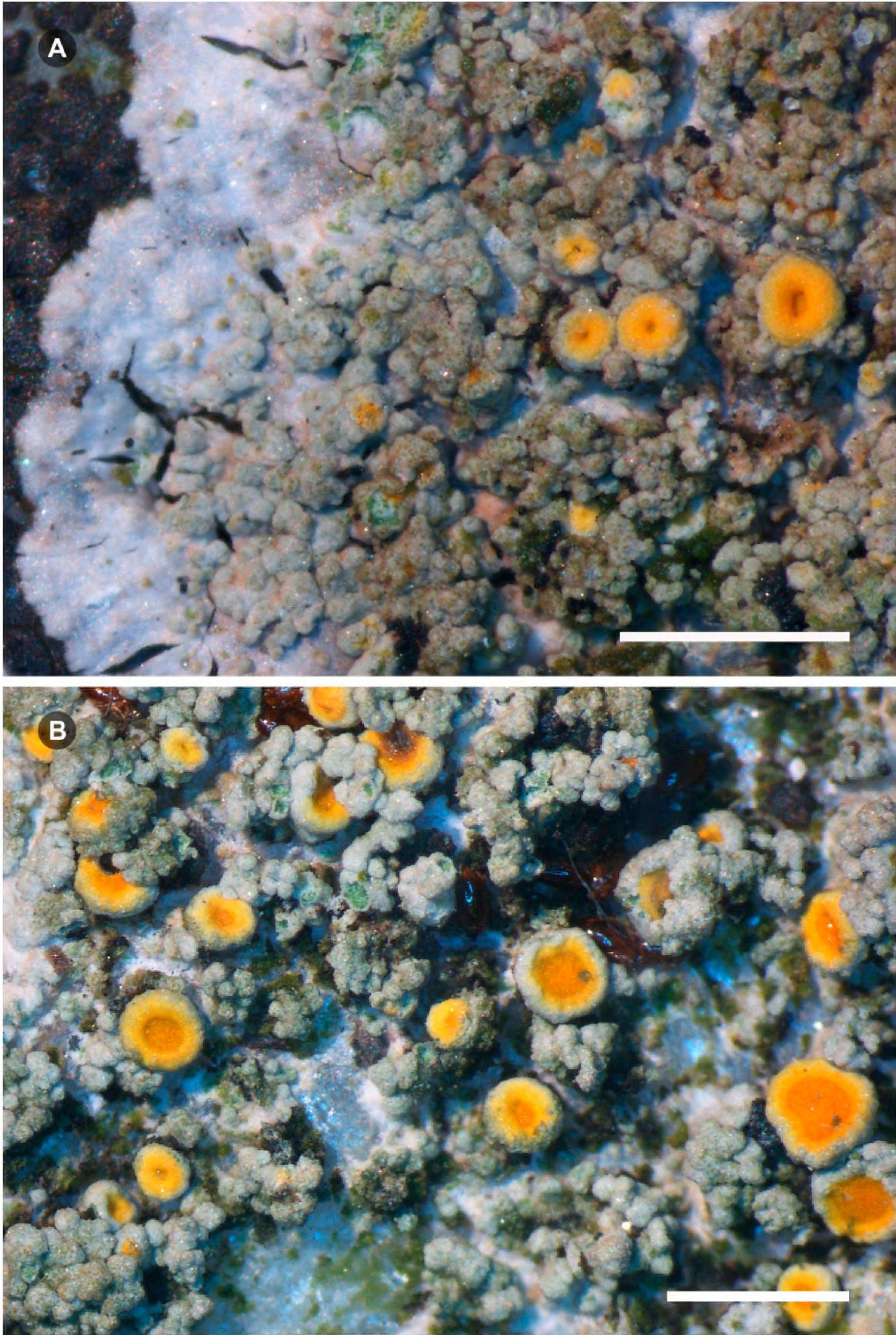


Figure 1, *Sirenophila ovis-atra* (both from the holotype). A, margin of young thallus on *Hydropunctaria* sp. B, central part of older thallus. Scale = 1.0 mm.



DESCRIPTION. – *Thallus* crustose, effuse, often with a grey appressed prothallus and with irregular, granular to slightly lobate, grey areoles often overgrowing *Hydropunctaria* sp. thalli; older thalli mostly fusing into a continuous, grey areolate crust with an occasional faint yellowish tinge (fig. 1).

*Apothecia* abundant, dispersed, zeorine, sessile, constricted at base, regular, up to 0.9 mm broad, initially strongly concave with prominent undifferentiated margin, later with a flat or slightly convex yellow-orange disc and a slightly prominent, 50–65 µm thick, concolorous proper exciple and a distinct, slightly crenulate, up to 60 µm thick thalline margin, concolorous with the thallus; *thalline margin* without or with an indistinct cortical tissue; *proper margin* hyaline, consisting of intricately interwoven hyphae that extend into the *c.* 50 µm high, hyaline *hypothecium*. *Hymenium* hyaline, 85–100 µm; *epihymenium* with medium coarse anthraquinone crystals on the surface; *paraphyses* 2–2.5 µm thick, branched, terminally only slightly swollen, up to 4 µm thick. *Asci* with 8 spores; *ascospores* ellipsoid, polardiblastic, (11.5)–13.8 ± 1.6–(17.3) × (6)–6.9 ± 0.5–8.5 µm [30], septum 5.8 ± 0.9 µm [30], ratio of septum/spore length *c.* 0.4

*Pycnidia* not observed.

CHEMISTRY. – The grey thallus is K-, C-, KC-, PD-, UV- and N- and contains no extractable secondary compounds. Orange pigmented parts of the thallus and the apothecia are K+ red. Parietin is the strongly dominant secondary compound in the apothecia corresponding to chemosyndrome A of Söchting (1997).

DISTRIBUTION AND ECOLOGY. – The new species is often parasitic on *Hydropunctaria* sp. on sheltered, maritime rocks at the transition between the black ‘*Hydropunctaria* zone’ and the orange ‘*Austroplaca* zone’, where it is often associated with *A. millegrana* (Müll. Arg.) Söchting, Frödén & Arup. It is probably common along the marine shores of Patagonia, but most likely largely overlooked due to its insignificant appearance, its concealed habitat and the lack of focused collecting in the region. It has been collected along the Chilean coast up to about 43° S, and is also recorded from the Falkland Islands and Macquarie Island (Australia). It may thus have a full circumantarctic distribution.

MOLECULAR RESULTS. – In addition to the sequences of nrITS, nrLSU and mrSSU that were published and deposited in Genbank by Arup et al. (2013) as “*Sirenophila* sp. 20”, seven new nrITS sequences of *S. ovis-atra* were produced for this study (see Table 1), five of which are 100% identical to “sp. 20” and two of which deviates from “sp. 20” in one and five positions out of 522, respectively.

In the phylogenetic analyses of Arup et al. (2013), *Sirenophila ovis-atra* (as “sp. 20”), was recovered in the genus *Sirenophila* in the subfamily *Teloschistoideae* of *Teloschistaceae*. Both in the three gene analysis and in the ITS analysis it was recovered as a sister species to *S. bermaguiana* (S.Y. Kondratyuk & Kärnefelt) Söchting, Arup & Frödén, which, like most other *Sirenophila* species, is known only from Australasia. The ITS sequence of *S. bermaguiana* available in GenBank (KC179299) deviates in 18 positions out of 522 from *S. ovis-atra*.

DISCUSSION. – Based on morphological or anatomical characters it is often impossible to discriminate many genera within *Teloschistaceae*, but molecular data already convincingly assigned the new species to *Sirenophila* in a prior study (Arup et al. 2013). This genus is very diverse in Australia and New Zealand, but has so far not been reported from the Northern Hemisphere, or from South America. *Sirenophila bermaguiana* from Australia is the closest relative based on the molecular results (see above) but the two species are morphologically very different. *Sirenophila bermaguiana* has an areolate, bright yellow to whitish thallus and very small, distinctly zeorine apothecia with orange discs (Kondratyuk et al. 2007 and Arup et al. 2013, fig. 52), whereas *S. ovis-atra* has larger, vivid yellow apothecia and a greyish thallus, and is restricted to sheltered maritime rocks mostly on *Hydropunctaria* sp. The ecology of the new species is analogous to two species of the mesic-supralittoral zone in the Northern Hemisphere, *Variospora thallincola* (Wedd.) Arup, Frödén & Söchting and *Flavoplaca microthallina* (Wedd.) Arup, Frödén & Söchting (Fletcher 1975). The almost total lack of orange pigmentation on the thallus is not an ecological modification due to low light intensities as *Austroplaca* species that grow with the new species display perfectly normal pigmentation. In Patagonia the maritime rocks above the *Hydropunctaria/ovis-atra* zone are occupied by a number of species belonging to *Austroplaca*, whereas similar habitats in the Australian region are abundantly occupied by the genus *Sirenophila*.

The ecology of *Sirenophila ovis-atra* is so extreme that it is unlikely to be found outside maritime habitats; however, it could occur under similar ecological conditions in other continents and thus be



described before. No species known from Australia comes close in morphology (Kondratyuk et al. 2012) and the one species with similar ecology and somewhat similar morphology from New Zealand, *Caloplaca papanui* D.J.Galloway has very thin septum, 1.5–2 µm (Galloway 2004). None of the publications of Carrol W. Dodge including his Antarctic Lichen Flora (Dodge 1973) include potential names for the new species, and our studies of lichen collections and literature pertinent to the Subantarctic Islands, Kerguelen, Crozet and Bouvetøya do not reveal relevant published species names.

*Additional specimens examined.* – **CHILE.** XII REGIÓN DE MAGALLANES Y DE LA ANTÁRTICA CHILENA: Province Antártica Chilena, Isla Navarino, 2 km E of Puerto Williams, maritime stone, in the upper part of the *Verrucaria* zone and the lower part of the *Caloplaca* zone, 0–2 m, 54.9297°S, 67.5725°W, 26.i.2008, on rock, *M.Z. Søgaard 90* (C), *M.Z. Søgaard 91* (C); E of Puerto Navarino, maritime cliff, 1–2 m, 54.9317°S, 68.3547°W, 28.i.2008, on rock, *M.Z. Søgaard 106a* (C); Caleta Honda, island in bay, 54.9153°S, 68.2259°W, maritime rock in *Verrucaria* zone, 1.ii.2015, on rock, *U. Søchting 12341* (C); 50 km SSW of Pta. Arenas, Fuerte Bulnes, 53.6321°S, 70.9130°W, alt. 3 m, on shaded, maritime rock, 8.ii.2015, *U. Søchting 12386b* (C). **X REGIÓN LOS LAGOS:** Chaitén, just outside central Chaitén, 42.9215°S 72.7190°W, 16.i.2001, on coastal rocks *P. Frödén 1616* (LD), *U. Arup L01145* (LD). **FALKLAND ISLANDS.** East Falkland, near Stanley, Murrell River, 51.65497°S, 57.92624°W, on shore of sheltered sea inlet, 2.ii.2015, on stones, *A. Orange 22656* (NMV-C.2015.004.66). **AUSTRALIA.** Macquarie Island, W side of The Isthmus, 4 m, 54.50°S, 158.95°E, 1995, on rock stack with *Verrucaria*, *R. Seppelt 19436* (HO).

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# *Pleospora xanthoriae* sp. nov. (Pleosporaceae, Pleosporales), a new lichenicolous fungus on *Xanthoria parietina* from Ukraine, with a key to the known lichenicolous species of *Dacampia* and *Pleospora*

ALEXANDER YE. KHODOSOVTSSEV<sup>1</sup> & VALERIY V. DARMOSTUK<sup>2</sup>

**ABSTRACT.** – The new lichenicolous fungus *Pleospora xanthoriae* is described from *Xanthoria parietina* thalli found in southern Ukraine. A key to the lichenicolous species of *Dacampia* and *Pleospora* is also provided.

**KEYWORDS.** – Ascomycota, Dothideomycetes, lichen parasites.

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## INTRODUCTION

*Pleospora* Rabenh. ex Ces. & De Not. is a large genus of terrestrial parasitic or saprobic fungi characterized by fissitunicate asci, anastomosing paraphysoids, muriform brown ascospores and pseudothecia of three layers: (1) a thin inner layer of thin-walled, hyaline to light brown flattened cells; (2) a relatively wide central layer of thin-walled, hyaline to light brown angular cells; (3) an outer very thin layer of dark-brown amorphous cells, which gives the brown-black colour to the ascomata (Hyde et al. 2013). Only several recently described species of *Pleospora* are lichenicolous namely, *P. tretiachii* Hafellner (= *P. aquatica* Tretiach & Nimis, see Tretiach & Nimis 1999) and *P. bernandetiae* van den Boom (van den Boom 2015). *Pleospora collematum* Zúkal (Clauzade et al. 1989, Silanes et al. 2009) and *P. crozalsii* Vouaux (Clauzade et al. 1989, Roux et al. 2006) are poorly studied and rare species. Recently, *P. physciae* (Brackel) Hafellner & E. Zimm. (Brackel 2010a,b; Hafellner & Zimmerman 2012) was transferred to *Didymocyrtis* Vain. as *D. physciae* (Brackel) Hafellner (Hafellner 2015), although this was without support from molecular studies. Considering that *Pleospora* is a genus containing plant parasites, lichenicolous species of “*Pleospora* morphology” have previously sometimes been described in the lichenicolous genus *Dacampia* A. Massal. (e.g., Halıcı et al. 2009a,b; Halıcı & Hawksworth 2008, Brackel 2010a,b; Kocourcová & Knudsen 2010). Diagnostic characters for *Dacampia* s. str. are the large ascomata with the ostiolar region forming a distinct neck lined by periphysoids, the ascomata connected to distinct, brown vegetative hyphae, and an ascus apex forming a ‘nasse apicale’ (Crivelli 1983, Henssen 1995, Hafellner & Zimmerman 2012). The type species of the genus, *D. hookeri* (Borrer) A. Massal., was placed in Pleosporales (Ertz et al. 2015), but the placement of other *Dacampia* species has not been revised. The aim of this study is to describe a new lichenicolous species dwelling on *Xanthoria parietina* (L.) Th. Fr. that we consider to represent a member of *Pleospora* s. lat. on the basis of its morphology.

## MATERIALS AND METHODS

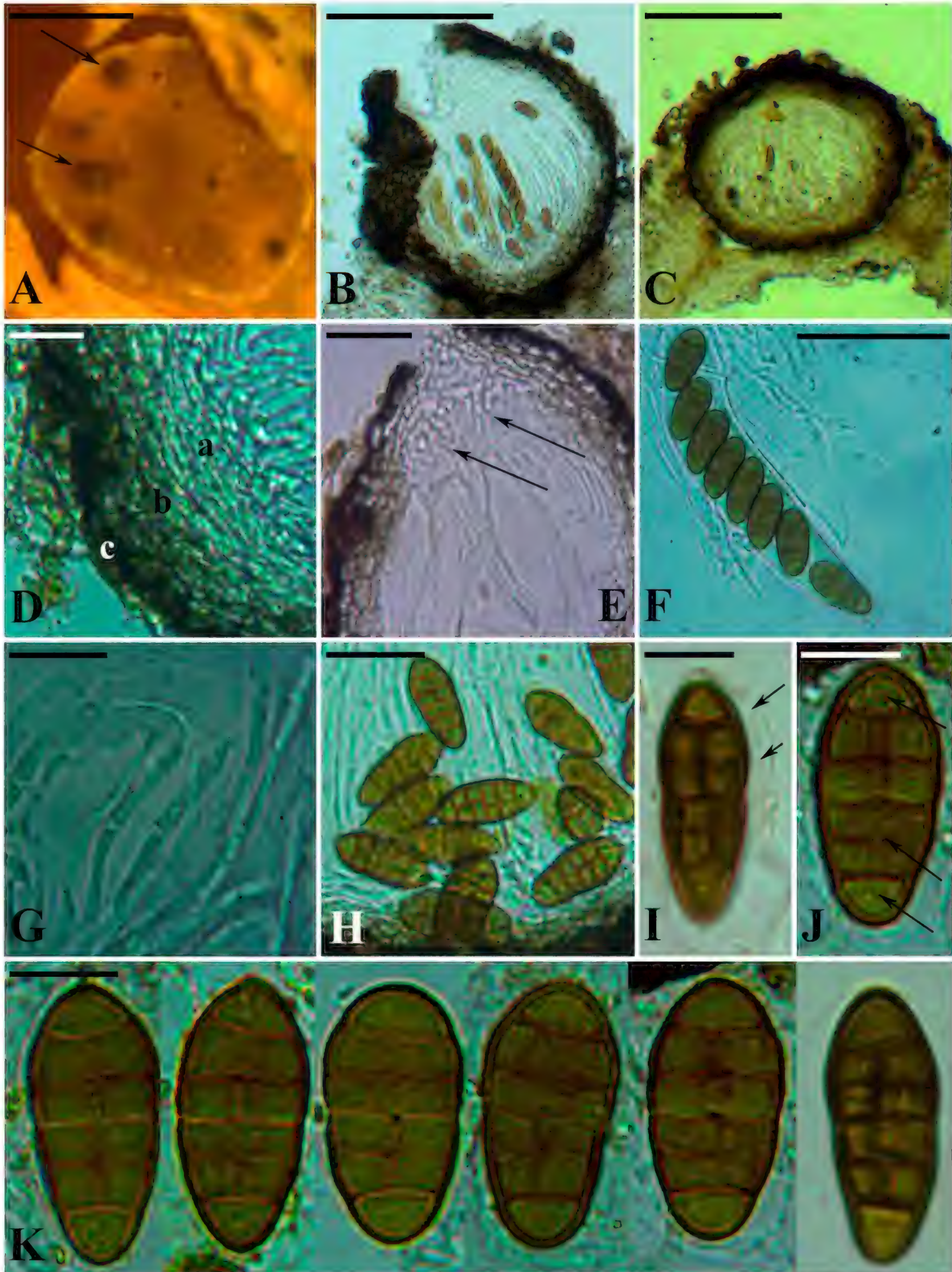
The material was examined using standard microscope techniques. Sections for anatomical examination were cut by hand and observed in water and 10% KOH. Amyloid reactions were tested in 1%

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**Figure 1**, morphology of *Pleospora xanthoriae* (all from the holotype). A, ascomata (arrows) in the apothecia of *Xanthoria parietina*. B and C, sections of ascomata in water. D, wall of ascoma in water (a = inner, b = central, c = outer layers). E, section of the ostiolar region in young ascoma with paraphysoids (arrows). F, ascus in water. G, paraphysoids in water. H, ascospores in water. I, hyaline halo (arrows) of ascospores in iodine. J, minute sharply pointed spines (arrows) of ascospore in water. K, ascospores in water (left five) and iodine (rightmost). Scales = 1.0 mm in A; 100  $\mu$ m in B & C; 50  $\mu$ m in E & F; 25  $\mu$ m in H; 10  $\mu$ m in D, G & I-K.



Lugol's iodine with (K/I) or without (I) pre-treatment with 10% KOH. Measurements were made in water with an accuracy 0.25 µm for ascospores, asci, paraphysoids and hyphal cells; 5.0 µm for ascomatal walls; 10.0 µm for ascomata. Measurements are given as (min.–) $\bar{x}$ ±SD(–max.), where  $\bar{x}$  is an average and SD a standard deviation. Photographs were taken with a “Levenhuk” camera on a stereomicroscope MBS-2 and microscope MICROMED-2. The specimens examined are deposited in the lichenological herbarium of Kherson State University (KHER).

## THE NEW SPECIES

### *Pleospora xanthoriae* Khodos. & Darmostuk, sp. nov.

MYCOBANK #816157.

### FIGURE 1.

DIAGNOSIS. – Lichenicolous fungus on *Xanthoria parietina*. Ascomata perithecioid, black, subglobose, (90–)150 ± 40(–220) µm. Ascomatal wall (15–)25 ± 5(–35) µm thick, brown. Hamathecium of cellular paraphysoids, septate, simple or branched and anastomosed, (1.3–)2.3 ± 0.5(–3.3) µm, I–. Asci clavate, fissitunicate, 8-spored, (90–)110 ± 15(–130) × (18–)22 ± 3(–25) µm. Ascospores arranged irregularly biserial to uniserial in the ascus, ellipsoid, golden brown, muriform, with 5 transverse septa and 0–2 longitudinal septa per transverse level, slightly constricted at median septa, (20.5–)24.5 ± 1.5(–27) × (9–)11 ± 1.3(–13) µm, covered by minute sharply pointed spines.

TYPE: **UKRAINE. KHERSON REGION:** Golopristsans'ky District, Black Sea Biosphere Reserve, Solonoozerna lot, N of Lake Gryazne, 46°27'33"N, 31°57'38"E, sand dunes, 29.ii.2008, on thallus and apothecia of *Xanthoria parietina* growing on plant debris, *O. Umanets 9319* (KHER!, holotype).

DESCRIPTION. – Vegetative hyphae scattered, medium brown, observed around ostiolar part, immersed in host thallus, c. 2–3 µm thick. Ascomata perithecioid, arising singly, with visible ostiole, without distinct neck, immersed at first to semi-immersed at maturity, black, subglobose, (90–)150 ± 40(–220) µm (*n*=15). Ascomatal wall composed of angular pseudoparenchymatous cells (*textura angularis*) in cross section, (15–)25 ± 5(–35) µm (*n*=15) thick, which formed three layers, a thin inner layer of thin-walled, hyaline tangentially elongated cells, (7.75–)9 ± 0.75(–10.5) × (2.0–)2.75 ± 0.5(–3.5) µm (*n*=15), a wide central layer of thin-walled, hyaline to light brown radially compressed cells, (5.5–)6 ± 0.5(–7.0) × (3.25–)3.75 ± 0.5 (–4.25) µm (*n*=20) and an outer of very thin amorphous cells, (5.25–)6.5 ± 0.5(–7.25) µm (*n*=10) wide with dark brown pigment deposited in external cellular walls. Hamathecium composed of abundant, septate, simple or branched and anastomosed cellular paraphysoids, (1.3–)2.3 ± 0.5(–3.3) µm (*n*=20), I–; ascomatal wall around ostiole in young ascomata of hyaline angular cells, c. 3–5 µm wide, true neck periphysoids absent. Asci clavate, fissitunicate, 8-spored, (90–)110 ± 15(–130) × (18–)22 ± 3(–25) µm (*n*=10), wall I–, plasma I+ orange. Ascospores irregularly biserial to uniserial in the ascus, ellipsoid, rounded to obtusely pointed at the apices, pale brown to golden brown (but old spores dark brown), muriform, with 5 transverse septa and 0–2 longitudinal septa per transverse level, 10–12 cells visible in optical field, slightly constricted at the median transverse septum, (20.5–)24.5 ± 1.5(–27) × (9–)11 ± 1.5(–13) µm, length/width (1.9–)2.3 ± 0.3(–2.9) (*n*=60); wall 1.0–1.5 µm thick with minute sharply pointed spines; hyaline halo 1.5–3.0 µm thick, finely visible in I, disappearing in overmature ascospores. Conidiomata not observed.

ECOLOGY AND DISTRIBUTION. – The new species is known only from southern Ukraine where it was found in on thalli and apothecia of *Xanthoria parietina* growing on the bark of *Populus tremula* in a small forest and on plant debris among sand dunes. It does not cause any bleaching of the thallus and apothecia.

OBSERVATIONS. – *Pleospora xanthoriae* is morphologically similar to *P. bernandetiae* which grows on *Protoparmeliopsis muralis* (Schreb.) M. Choisy, but that species has broadly ellipsoid ascospores (15–17 µm wide vs. 9–13 µm in *P. xanthoriae*), larger ascomata (400 µm wide vs. 90–220 µm in *P. xanthoriae*), and longer asci (150–200 µm long vs. 90–130 µm in *P. xanthoriae*) (van den Boom 2015). *Pleospora tretiachii* which is found on *Aspicilia supertegens* Arn. has larger ascospores (32–88 × 17–25 µm vs. 20.5–27 × 9–13 µm in *P. xanthoriae*), and ascomata larger (260–420 µm wide vs. 90–220 µm in *P.*

*xanthoriae*) (Tretiach & Nimis 1999). *P. collematum* and *P. crozalsii* have narrower ascospores measuring  $13 \times 4 \mu\text{m}$  and  $16\text{--}21 \times 6\text{--}7 \mu\text{m}$  respectively, and grow on different hosts (see key below; Clauzade et al. 1989). Morphologically, *P. xanthoriae* is similar to some species of *Dacampia* and *Didymocyrtis*. *Dacampia lecaniae* Kocourk. & K. Knudsen described from *Lecania fuscella* (Schaer.) A. Massal. has smooth-walled ascospores (vs. ascospore walls with minute sharply pointed spines in *P. xanthoriae*) with 7 transverse septa (vs. 9–11 septa in *P. xanthoriae*) (Kocourcová & Knudsen 2010). There are two *Dacampia* species that are lichenicolous on Teloschistaceae and thus might be confused with the new taxon. *Dacampia xanthomendozae* Etayo & Halıcı occurs on species of the genus *Xanthomendoza* S.Y. Kondr. & Kärnefelt but has longer ascospores ( $26.5\text{--}35.5 \mu\text{m}$  long vs.  $20.5\text{--}27 \mu\text{m}$  in *P. xanthoriae*) with 7 transverse septa (vs. 9–11 transverse septa in *P. xanthoriae*) (Halıcı et al. 2009b). *Dacampia caloplacicola* Halıcı, Candan & Etayo grows on *Caloplaca crenularia* (With.) J.R. Laundon and has narrower ascospores ( $6\text{--}8 \mu\text{m}$  wide vs.  $9\text{--}13 \mu\text{m}$  in *P. xanthoriae*), with 3 transverse septa (vs. 9–11 transverse septa in *P. xanthoriae*), and the ascospores are strongly constricted at the median septum (vs. slightly constricted at the median transverse septum in *P. xanthoriae*) (Halıcı et al. 2009b). *Pleospora xanthoriae* is morphologically similar to *Didymocyrtis physciae* which grows on *Physcia* species, but differs from the latter in its larger ascospores ( $20.5\text{--}27 \times 9\text{--}13 \mu\text{m}$  vs.  $14.5\text{--}16.5 \times 6\text{--}7 \mu\text{m}$  in *D. physciae*) and different host (Brackel 2010a, Hafellner & Zimmerman 2012, Hafellner 2015).

*Additional specimen examined.* – **UKRAINE. KHERSON REGION:** Goloprystans`ky District, Chalbas`ka arena, Promin` village, Shelemens`ki lakes,  $46^{\circ}20'15''\text{N}$ ,  $32^{\circ}49'07''\text{E}$ , small *Populus* forest, 5.xii.2015, on *Xanthoria parietina* growing on bark of *Populus tremula*, A. Khodosovtsev 9330 (KHER!).

#### KEY TO KNOWN LICHENICOLOUS *DACAMPIA* AND *PLEOSPORA* SPECIES (INCL. *DIDYMOCYRTIS PHYSCIAE*)

1. Ascospores  $>30 \mu\text{m}$  in length ..... 2
  2. Asci 8-spored; lichenized; associated with *Solorina* spp. (see Henssen 1995)..... ***D. hookeri***
  2. Asci 2–6-spored; non lichenized; non associated with *Solorina* spp ..... 3
    3. Ascospores with conspicuous hyaline halo ..... 4
      4. Ascospores  $(32\text{--})41\text{--}55(\text{--}88) \times (17\text{--})19\text{--}21(\text{--}25) \mu\text{m}$ ; asci 4–6-spored; upper part of ascomatal cells K–; on aquatic *Aspicilia supertegens* (see Tretiach & Nimis 1999) ..... ***P. tretiachii***
      4. Ascospores  $(22\text{--})26.5\text{--}38.5(\text{--}40.0) \times 11.5\text{--}15(\text{--}17) \mu\text{m}$ ; asci (2–)4-spored; upper part of ascomatal walls K+ purple; on *Circinaria fruticulosa* (see Halıcı et al. 2009a) ..... ***D. rubra***
    3. Ascospores without conspicuous hyaline halo ..... 5
      5. Asci (4–)6-spored; ascospores  $(26.5\text{--})28\text{--}32(\text{--}35.5) \times (10.5\text{--})10.9\text{--}13.1(\text{--}13.5) \mu\text{m}$ ; on *Xanthomendoza* spp. (see Halıcı et al. 2009b) ..... ***D. xanthomendozae***
      5. Asci 2–4-spored; ascospores  $(30\text{--})34\text{--}39 \times (10\text{--})14.5\text{--}16 \mu\text{m}$ ; on *Rhizocarpon obscuratum* (see Halıcı & Hawksworth 2008)..... ***D. rhizocarpicola***
1. Ascospores  $< 30 \mu\text{m}$  in length ..... 6
  6. Ascospores  $> 9 \mu\text{m}$  in width..... 7
    7. Ascospores with up to 5 transverse septa ..... 8
      8. Ascomata  $150\text{--}250 \mu\text{m}$  in width ..... 9
        9. Ascospores with 3–4 transverse septa, without hyaline halo,  $(23\text{--})24.5\text{--}27 \times 11\text{--}13 \mu\text{m}$ ; forming necrotic spots; on *Peltigera* spp. (see Hawksworth 1986)..... ***D. rufescentis***
        9. Ascospores with 5 transverse septa, with hyaline halo,  $(20.5\text{--})23.8\text{--}25.8(\text{--}27.0) \times (9.0)9.5\text{--}12(\text{--}13.0) \mu\text{m}$ ; not forming necrotic spots; on *Xanthoria parietina* ***P. xanthoriae***
      8. Ascomata  $250\text{--}600 \mu\text{m}$  in width ..... 10
        10. Ascospores  $22\text{--}32 \times 15\text{--}17 \mu\text{m}$ ; ascomata up to  $400 \mu\text{m}$  in width; on *Protoparmeliopsis muralis* (see van den Boom 2015)..... ***P. bernandetiae***
        10. Ascospores  $18\text{--}25 \times 8\text{--}10 \mu\text{m}$ ; ascomata  $250\text{--}450(\text{--}600) \mu\text{m}$  in width; on *Solorina saccata* (see Bricaud & Roux 1990) ..... ***D. engeliana***
    7. Ascospores with up to 7 transverse septa ..... 11
      11. Asci 2–4-spored; ascospores without hyaline halo,  $21\text{--}26(\text{--}31.5) \times (7.0\text{--})9.0\text{--}12.5(\text{--}14.5) \mu\text{m}$ ; on *Protoparmeliopsis muralis* (see Halıcı & Hawksworth 2008)..... ***D. muralicola***
      11. Asci 8-spored; ascospores with hyaline halo ..... 12

12. Asci 70–100 × 22–24 µm; ascospores (23–)25–29(–31.5) × 11–13 µm; on <i>Thamnolia vermicularis</i> (see Zhurbenko 2012) .....	<b><i>D. thamnoliicola</i></b> ad int.
12. Asci 110–140 × 20–30 µm; ascospores (21–)22.8–26.5(–28) × (8–)9.5–12 µm; on <i>Lecania fuscella</i> (see Kocourková & Knudsen 2010).....	<b><i>D. lecaniae</i></b>
6. Ascospores < 9 µm in width.....	<b>13</b>
13. Ascomata 150–200 µm in width .....	<b>14</b>
14. Ascospores 4 µm in width; on <i>Lempholemma compactum</i> (see Clauzade et al. 1989) .....	<b><i>P. collematum</i></b>
14. Ascospores > 4 µm in width; not on <i>Lempholemma compactum</i> .....	<b>15</b>
15. Ascospores 16–26 µm in length.....	<b>16</b>
16. Ascospores 8–9 µm in width.....	<b>17</b>
17. Ascomata 180–210 µm in width; ascospores usually with 5–6 transverse septa, (19–)21.5–26 × 8–9 µm; on <i>Peltigera rufescens</i> (see Bennett-Earland et al. 2006).....	<b><i>D. peltigericola</i></b>
17. Ascomata 110–160 µm in width; ascospores usually with 5–7 transverse septa, (19.5–)21.2–24.9(–26) × (6.5–)6.8–8.3(–9) µm; on <i>Lecania cyrtella</i> (see Brackel 2010a).....	<b><i>D. cyrtellae</i></b>
16. Ascospores 5–7 µm in width.....	<b>18</b>
18. Ascospores 16–21 × 6–7 µm; on <i>Sticta sylvatica</i> (see Clauzade et al. 1989) ...	<b><i>P. crozalsii</i></b>
18. Ascospores 21–25 × 5–6.5 µm; on <i>Leptogium burgessii</i> and <i>Pannaria rubiginosa</i> (see Halıcı & Hawksworth 2008) .....	<b><i>D. leptogiicola</i></b>
15. Ascospore 9–17 µm length .....	<b>19</b>
19. Ascospores (9.5–)10.5–12(–12.5) × (4.5–)5.5–6.5 µm, without halo; on <i>Cladonia foliacea</i> (see Halıcı et al. 2008) .....	<b><i>D. cladoniicola</i></b>
19. Ascospores 14.5–16.5 × 6–7 µm, with hyaline halo; on <i>Physcia</i> spp. (see Hafellner 2015).....	<b><i>Didymocyrtis physciae</i></b>
13. Ascomata 250–600 in width.....	<b>20</b>
20. Ascospores (17–)18.5–21.3(–23) × (6–)6.5–7.9(–8) µm, strongly constricted at median transverse septum; on <i>Caloplaca crenularia</i> (see Halıcı et al. 2009b) .....	<b><i>D. caloplacicola</i></b>
20. Ascospores 18–25 × 8–10 µm, slightly constricted at median transverse septum; on <i>Solorina saccata</i> (see Bricaud & Roux 1990).....	<b><i>D. engeliana</i></b>

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## The cyanomorph of *Ricasolia virens* comb. nov. (Lobariaceae, lichenized Ascomycetes)

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**ABSTRACT.** – The cyanomorph and photosymbiodemes are here reported for the first time for *Ricasolia virens* (With.) H.H. Blom & Tønsberg comb. nov. ( $\equiv$  *Lobaria virens* (With.) J.R. Laundon). The cyanomorph of *R. virens* is dendriscocauloid. The observed early developmental stages involve (1) a free-living cyanomorph and (2) a photosymbiodeme composed of the cyanomorph supporting small, foliose, chloromorphic lobes. Whereas the chloromorph continues to grow, the cyanomorph decays and disappears leading to the final stage (3), the free-living chloromorph. Secondary cyanomorphs emerging from the chloromorph are not known.

**KEYWORDS.** – Peltigerales, cephalodia, ascospore-to-ascospore life cycle.

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### INTRODUCTION

Most species of lichen-forming fungi associate with a photobiont belonging to either the green algae or cyanobacteria (e.g., Brodo et al. 2001, Henssen & Jahns 1973, Nash 2008, Schwendener 1869). Within the family Lobariaceae, however, many species associate with both photobionts (e.g., Högnabba et al. 2009, James & Henssen 1976). Such ability to establish a physiological exchange with two types of photobionts may be expressed within a single thallus, in distinct thalli or portions thereof, or in distinct developmental stages. In tripartite lichens, three partners engage in the symbiotic association, and both photobionts are present, typically with the green algae composing the main partner, and the cyanobacteria encapsulated within specialized structures called cephalodia. Some fungal species may form, in addition to the tripartite lichen, a thallus comprising solely the cyanobacterium as photosynthetic partner (Högnabba et al. 2009, Honegger 2008, James & Henssen 1976), and this thallus may subsequently incorporate green algae and then bear green lobes (Tønsberg & Goward 2001). Alternative associations by a single fungal species wherein either one of the two photobionts is the primary autotroph are called photomorphs or morphotypes (i.e., the cyanomorph or the chloromorph). Photomorphs may be physically attached (e.g., in *Ricasolia amplissima* (Scop.) De Not.), forming a composite thallus that is referred to as a photosymbiodeme, or exhibit diverging ecological preferences (e.g., *Sticta filix* (Sw.) Nyl., James & Henssen 1976) and in some case distinct geographic distributions (e.g., in *Sticta canariensis* (Bory) Bory ex Delise, see Brodo 1994). Photomorphs may have the same growth form (e.g., in *Nephroma arcticum* (L.) Torss., where they are both foliose; see Tønsberg & Holtan-Hartwig 1983), or distinct growth forms, with the fungus forming a foliose tripartite lichen and a fruticose cyanomorph (James & Henssen 1976).

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Species with fruticose, dendriscocauloid, cyanomorphs forming photosymbiodemes occur exclusively in the Lobariaceae (Högnabba et al. 2009, James & Henssen 1976, Magain et al. 2012, Moncada et al. 2013). Photosymbiodemes are particularly frequent and conspicuous in *Ricasolia amplissima* (James & Henssen 1976, Krog et al. 1994, Rose & Purvis 2009, Stenroos et al. 2003, Tønsberg & Goward 2001, Wirth et al. 2013). *Lobaria virens* (With.) J.R. Laundon also forms foliose cephalodiate chlorolichens and may be closely related to *R. amplissima* (Högnabba et al. 2009). The two species are similar but *L. virens* is not known to develop cyanomorphs and photosymbiodemes (e.g., Krog et al. 1994, Rose & Purvis 2009, Wirth et al. 2013). Here we report and characterize such associations for the first time, based on specimens from Norway, and discuss their potential significance in the development of the free-living chloromorph of the species. Furthermore, since *L. virens* was resolved within the genus *Ricasolia* in recently published phylogenetic studies (Högnabba et al. 2009, Moncada et al. 2013), we extend our discussion on the development of the lichen thallus to the genus *Ricasolia*.

## MATERIALS AND METHODS

**FIELDWORK.** – The material of *Lobaria virens* that provided the basis for this study was primarily collected by HB, JHH, LL and TT in various parts of Western and Central Norway. All specimens are deposited in the herbarium of the University of Bergen (BG). Unless otherwise stated, the datum for localities is WGS84. The recorded altitudes (above sea-level) for the cited specimens were obtained from topographic maps with contour intervals of 20 meters.

**HERBARIUM STUDIES.** – All specimens of *Lobaria virens* at BG were studied, and critically examined for the presence of cyanomorphs. Macroscopic descriptions of the cyanomorphs were based on composite thalli (i.e., thalli composed of a cyanomorph with an attached chloromorph) when possible. The extremely fragile and hence easily damaged cyanomorphs had to be subjected to destructive sampling for microscopic examination. To diminish or avoid damage to the composite thalli, samples were taken preferentially from free-living cyanomorphs adjacent or close to a composite thallus on the same small piece of bark. The description of the chloromorph was based on the recent collections and about 170 specimens held in BG. The cephalodia were studied on fresh collections of the chloromorphs. North American specimens identified as *Sticta herbacea* (Huds.) Ach. and filed under *L. virens* were obtained on loan from F.

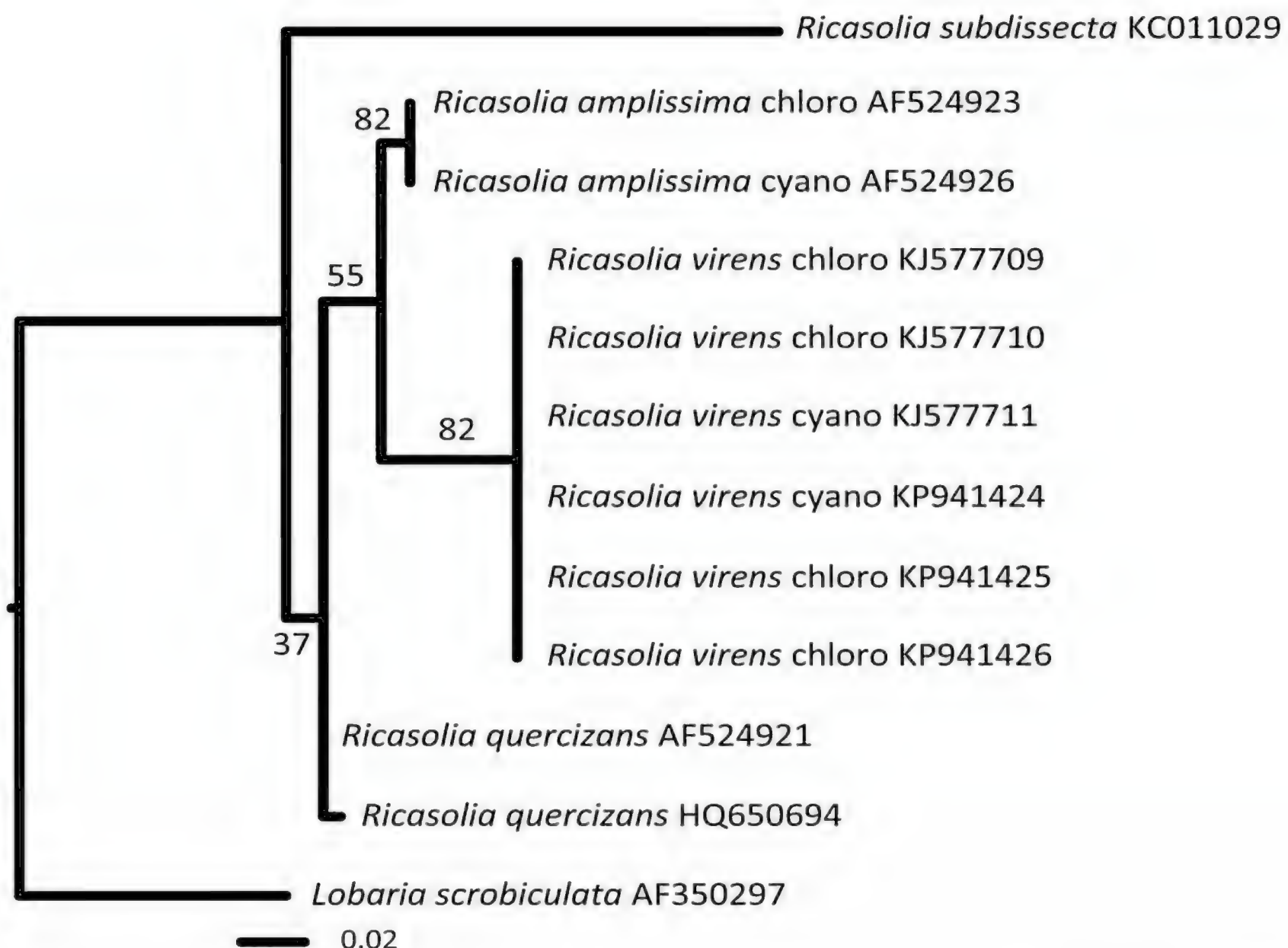
**CHEMISTRY.** – Thin-layer chromatography (TLC) was carried out on cyanomorphs and chloromorphs according to Culberson & Kristinsson (1970) and later modifications. All three solvents (A, B' and C) were used and glass plates were used in solvent C to allow for the detection of fatty acids.

**MOLECULAR METHODS.** – To preliminarily test whether the cyanomorph and chloromorph were formed by the same lichen-forming ascomycete (i.e., *L. virens*), we compared the ITS sequences of seven mycobionts from separate photomorphs as well as of photosymbiodemes (see Table 1 in the Appendix). The DNA extraction, amplification, and sequencing followed Lindblom & Ekman (2005) and Lendemer & Goffinet (2015). Sequences were aligned using ClustalW in BioEdit ver. 7.2.3 (Hall 1999), and manually adjusted. To reflect the variation of ITS sequences within *Ricasolia* and the segregation of species, and hence the power of ITS in discriminating among species, a Maximum Likelihood (ML) analysis was conducted with Garli v. 2.0 (Zwickl 2006) and branch support estimated from 200 bootstrap pseudoreplicates. The sequences were partitioned into ITS1, 5.8S and ITS2 and substitution models estimated and selected using PartitionFinder (Lanfear et al. 2012) based on the AIC, with HKY+G applied to ITS 1 and ITS2 and K80+I to the 5.8S partition. No characters were excluded. The matrix of ITS sequences representing species of *Ricasolia*, including *R. virens*, and of the outgroup *Lobaria scrobiculata* (Scop.) DC., was deposited in TreeBase as study #19339.

## RESULTS AND DISCUSSION

Phylogenetic inferences from variation in the mitochondrial SSU and the nuclear LSU have previously robustly resolved *Lobaria virens* as a member of *Ricasolia* (Högnabba et al. 2009, Moncada et al. 2013), yet the species has not been formally transferred to this genus. Hence we propose the new combination below. The species is endemic to Western Europe and Macaronesia and differs from the sym-





**Figure 1.** Most likely phylogenetic tree inferred from ITS sequences for accessions of *Ricasolia*. Values above branches refer to bootstrap support.

-patric *R. amplissima* by the thallus color, smaller thallus, lobes and spores and the lack of erumpent dendriscocauloid cephalodia (Purvis et al. 1994, Rose & Purvis 2009, Tønsberg & Jørgensen 2007). Based on our data the fungal ITS sequences of the chloromorph of *R. virens* are distinct from those of *R. amplissima* and *R. quercizans* (Michx.) Stizenb. deposited in GenBank (compared 12 Nov. 2015; see Figure 1), and can serve to discriminate between the species, especially when seeking to identify the mycobiont of dendriscocauloid thalli, which may not differ morphologically between the species.

We discovered multiple associations of two photomorphs in the immediate vicinity of well-developed chloromorphs of *R. virens*. We obtained six complete and one partial (KJ577709) ITS sequences for photomorphs of *R. virens* (Table 1). Phylogenetic inferences based on variation within the ITS region have been widely used to assess species boundaries among lichen-forming fungi based on the criterion of monophyly, including in the Peltigerales (e.g., Miadlikowska et al. 2003, 2014; Moncada & Lücking 2012; Moncada et al. 2013; Sérusiaux et al. 2009, 2011). Assuming the absence of hybridization, the ITS sequence may then serve to diagnose the specific identity of the mycobiont, and test the hypothesis that thalli with either prokaryotic or eukaryotic photobionts may be alternative photomorphs generated by a single fungal species (e.g., Goffinet and Bayer 1997, Lendemer and Goffinet 2015). The fungal ITS sequences we generated from each of the cyanomorphs was identical to those of the attached or independent chloromorphs of *R. virens* (Figure 1), suggesting that the same fungal species is involved in all thalli and thus that *R. virens* may compose photosymbiodemes of cyano- and chloromorphs. Unlike the photosymbiodemes of *R. amplissima* the cyanomorph does not develop secondarily on the chloromorph but in fact precedes the latter in the development of the green thallus.



## TAXONOMIC SECTION

***Ricasolia virens* (With.) H.H. Blom & Tønsberg comb. nov.**

MycoBank #815140.

- ≡ *Lichen virens* With., A botanical arrangement of all the vegetables naturally growing in Great-Britain, p. 710. 1776. ≡ *Lobaria virens* (With.) J.R. Laundon, Lichenologist 16: 227. 1984. **TYPE:** Dillenius, J.J. 1742 [“1741”] *Historia Muscorum*. Oxford: University (Sheldonian Theatre), tab. 25, fig. 98A (lectotype [reproduction by Laundon 1984 seen; original illustration in Dillenius 1742 not seen], selected by Laundon (1984: 227)). **EPITYPE:** Dillenius herbarium of *Historia Muscorum* 98A “middle specimen” (OXF [n.v.], selected by Tønsberg & Jørgensen (2007: 145)).
- = *Lichen laetevirens* Lightf. *nom. illeg.*, Fl. Scot. 2: 852. 1777. ≡ *Parmelia laetevirens* (Lightf.) Schaer., Lich. Helv. Spec. p. 461. 1840. ≡ *Sticta laetevirens* (Lightf.) Rabenh., Deutschl. Krypt.-Fl. 2: 64. 1845. ≡ *Ricasolia laetevirens* (Lightf.) Leight., Lich.-Fl. Great Brit. p. 121. 1871. ≡ *Lobaria laetevirens* (Lightf.) Zahlbr. in Engler & Prantl, Nat. Pflanzenfam., 1: 188. 1906.
- = *Lichen herbaceus* Huds., Fl. Angl., ed. 2, p. 525. 1778. ≡ *Pulmonaria herbacea* (Huds.) Hoffm., Descr. Adumb. Plant. Lich. 1(2): 51. 1789. ≡ *Parmelia herbacea* (Huds.) Ach., Methodus, p. 218. 1803. ≡ *Lobaria herbacea* (Huds.) DC., in Lamarck & de Candolle, Fl. Franç., ed. 3, 2: 403. 1805. ≡ *Platysma herbaceum* (Huds.) Frege, Deutsch. Botan. Taschenb. 2: 165. 1812. ≡ *Sticta herbacea* (Huds.) Ach., Syn. Meth. Lich. p. 341. 1814. ≡ *Peltidea herbacea* (Huds.) Link, Grundr. Krauterk. 3: 176. 1833. ≡ *Ricasolia herbacea* (Huds.) De Not., G. Bot. Ital., sér. 2, 1(1): 180. 1846.

**DESCRIPTION.** – **The cyanomorph.** Thallus dendriscocauloid (Figure 2), forming fragile, convex, loose to rather compact cushions to 12 mm wide and 5 mm tall. Main branches brownish, bluish or whitish gray, terete or flattened, to 0.40 mm wide, smooth, naked to finely tomentose; terminal branchlets bluish grey or brown, terete, sometimes slightly widening towards tips; branching pattern sometimes palmate. Branches usually naked or with a few hairs evident in microscope preparations; hairs usually simple, occasionally with short side branches, moniliform, 1–5 celled, to 24 µm long; individual cells usually globose, to 7(–12) µm wide, sometimes cylindrical. Cortex brown, 1–3 cell layers thick, to 24 µm thick; cells isodiametric and 7–12 µm in diameter or elongate and 6–11(–17) × 4–8(–9.6) µm; central cord of longitudinally running hyphae 3 µm wide. Photobiont layer of uneven thickness, 29–50(–85) µm; photobiont cyanobacterial, probably *Nostoc*, bluish, sometimes pale green, single celled, irregularly rounded to irregularly ellipsoid, 5–10 × 4–7(–10) µm. Apothecia and pycnidia not observed. **The photosymbiodeme.** Composed of a primary cyanomorph and a secondary chloromorph (Figure 2). Chloromorph one (Figure 2C) to several per cyanomorph (Figures 2A and B), to 12 mm in diameter, developing from branches of the cyanomorph, evident at first as small, brownish nodules then flattened, dorsiventral, at first usually rounded to reniform, lobule-like thalli fastened to the cyanomorph by their edges (Figures 2A and B), or rarely, with a short stalk (Figure 2A, see the small lobule in the bottom left corner); cyanomorph dying and vanishing as chloromorph grows. Secondary growth of cyanomorphs from chloromorphs not seen. Apothecia and pycnidia not observed. **The chloromorph.** For complete descriptions of the mature chloromorph, see, e.g., Rose & Purvis (2009) and Tønsberg & Jørgensen (2007). Well-developed chloromorphs with spherical internal cephalodia mostly in the lower part of the medulla, visible on the underside of the thallus as brownish (contrasting with the paler surrounding cortex), ± hemispherical swellings of the lower cortex. Lobules (called *folioles* by Rose & Purvis 2009) common (i.e., in more than half of the specimens studied), mostly along damaged thallus margins and laminal cracks, varying from narrow (finger-like) and to a few mm long to more or less rounded and to 5 mm or more in diameter; rounded lobules sometimes fastened by a narrow holdfast or a stalk and thus more or less similar to the juvenile chloromorph lobules seen in the photosymbiodemes. Apothecia and pycnidia are usually frequent.

**CHEMISTRY.** – No substances found. Spot tests (cortex and medulla): K-, C-, KC-, P-, UV-.

**ECOLOGY AND DISTRIBUTION.** – *Ricasolia virens* is mainly distributed in Western Europe and Macaronesia (Degelius 1935, Rose & Purvis 2009, Tønsberg & Jørgensen 2007). In Norway, *R. virens* occurs in a broad belt along the coast from the Oslofjord area in the southeast to Nordland county in the north (*fide* The Norwegian Lichen Database; <http://nhm2.uio.no/lav/web/index.html>). *Ricasolia virens*

cyanomorphs and photosymbiodemes are known from several localities in Hordaland county in the southwest and one in Nord-Trøndelag county in Central Norway. They may be readily seen *in situ* in young populations of chloromorphs. However, some localities with large populations of well-developed and fertile *R. virens* chloromorphs on cliffs and/or tree trunks, photosymbiodemes could not be located despite extensive searches. Cyanomorphs and photosymbiodemes have been found on naked or mossy trunks of *Fraxinus excelsior* (the most common phorophyte), *Populus tremula*, and *Tilia cordata*, and on boulders in a *Corylus avellana*-*Populus tremula* stand and a *Corylus avellana* thicket.

DISCUSSION. – We were able to match the morphology of the alga-containing components of the photosymbiodemes to the chloromorphs of *Ricasolia virens* (Figure 2). These data, combined with the 100% sequence identity of the mycobionts, strongly support the hypothesis that all cyanomorphs, chloromorphs and photosymbiodemes studied involve the same fungal species. Consequently all of these morphs should be referred to as *R. virens* since the name of a lichen refers to the mycobiont.

*Ricasolia virens* is primarily known from Europe and Macaronesia (Rose & Purvis 2009). It is not thought to occur in North America (Esslinger 2015), but several herbaria hold specimens, mostly collected in the 1800's, that were identified as *L. virens*, *L. laetevirens* or *Sticta herbacea* (Huds.) Ach. (records viewed through <http://lichenportal.org> on 17 March 2016). We examined four specimens held in F (C0300964F, C1011324F, C1011330F, and C1011336F) and these were all conspicuously C+ (*R. virens* would be C–) and hence belong to *R. quercizans*, which is endemic and widespread in eastern North America (Brodo et al. 2001). We assume that all other North American collections filed under *R. virens* are also misidentified and likely represent *R. quercizans*.

The cyanomorph of *Ricasolia virens* is only known from Norway, and hence exhibits a much narrower geographic distribution than the chloromorph. Whether this pattern reflects significant ecological constraints on the cyanomorph or is shaped by the distribution of a specific *Nostoc* is not yet known. In the sympatric *R. amplissima*, dendriscocauloid cyanomorphs emerging from chloromorphs appear to be common throughout the range of the species in Eurasia and Africa (e.g. Degelius 1935). Whereas the geographical ranges of *R. amplissima* and *R. virens* can be defined by the ranges of their chloromorphs, the reverse is true for other species forming photosymbiodemes. A well-known example is *Sticta canariensis*, which occurs in Western Europe and Macaronesia (James & Henssen 1976, James & Purvis 2009) and in Ontario, Canada (Brodo 1994). In the Old World the chloromorph predominates in the southern and the cyanomorph in the northern part of its range (James & Henssen 1976). In the northernmost part of this range (i.e., Norway) the chloromorph is rare and present only as small lobes on well-developed cyanomorphs (Tønsberg 1990). According to James & Henssen (1976), *S. canariensis* chloromorphs do not occur outside the range of the cyanomorphs. In North America, the species is only associated with *Nostoc* (Brodo 1994), strengthening the pattern of a broader geographic distribution of the cyanomorph.

*Ricasolia virens* has probably at least two reproductive strategies, symbiotic (i.e., the simultaneous dispersal of the mycobiont and the photobiont via specialized lichenized thallus structures or fragments) and aposymbiotic (i.e., dispersal of the mycobiont by ascospores). The chloromorph often develops narrowly stalked lobules, which easily break off and hence could serve as diaspores. Such lobules may allow effective establishment on suitable substrates (i.e., rock, bark, moss), where they would grow to mature chloromorphs directly (i.e., mature chloromorph → chloromorph lobules → mature chloromorph). *Ricasolia virens* may potentially also propagate via fragments from the fragile cyanomorph. The presence of small cyanomorph fragments near the photosymbiodemes in some of the collections (see figure 4C) lends support to this hypothesis, but further study is needed to empirically test this.

At maturity *Ricasolia virens* forms a chloromorph harboring cyanobacterial colonies as internal cephalodia. The ontogeny of this tripartite association is not known. We hypothesize, given the observation of green lobules developing from the dendriscocauloid thallus, that when *R. virens* ascospores land on an appropriate substrate and germinate, they may first make contact with suitable, free-living cyanobacteria and form dendriscocauloid cyanomorphs. Free-living green algae are subsequently recruited or captured, leading to the development of chloromorphs. We have no indication that *R. virens* is capable of obtaining algae or cyanobacteria from other lichens. The juvenile life cycle stages of *R. virens* would or could thus be: Germinating ascospore (free-living) → cyanomorph → cyanomorph + chloromorph (photosymbiodeme) → chloromorph. *Nostoc* could be integrated *de novo* in the earliest stage of the chloromorph or acquired from the cyanomorph via the attachment stalk. The former is certainly possible, considering that the symbiotic lobules of the chloromorph acting as vegetative diaspores appear to lack cyanobacteria.





**Figure 2.** *Ricasolia virens* (all from Tønsberg 40924, BG). A-C, dendriscocauloid cyanomorphs without or with chloromorph lobules (photosymbiodemes). Scale bars = 2 mm. Photos by E. Timdal 2013.

Whether the juvenile cyanolichen stage following ascospore dispersal is obligate in *Ricasolia virens* is not clear. Our observations may suggest that cyanomorphs are an integral part of the life cycle of the lichen association. However, large populations of *R. virens* chloromorphs have been studied in the field without any observations of cyanomorphs, which may suggest that germinating ascospores can associate with the green photobiont and form chloromorphs without a cyanomorphic stage (i.e., chloromorph → germinating ascospore → chloromorph). Alternatively, the lack of observations of a cyanomorph stage in these populations could well be explained by the cyanomorph being ephemeral and thus rarely observed.

Fungi of the Peltigerales may be lichenized with either a cyanobacterium only or primarily with a green alga with subordinate associations with *Nostoc*. Neither association identifies only a single



homogenous clade, and transitions between these appear numerous during the diversification of the Peltigerales (see Moncada et al. 2013). The polarity of the shifts remains ambiguous. Miadlikowska & Lutzoni (2004) proposed that the association with *Nostoc* is ancestral in the Peltigerales and Högnabba et al. (2009) further argued that it was the ancestral type in the Lobariaceae. The latter study, however, suggested that *Ricasolia* species are primarily associated with a green alga, an interpretation that may change once the occurrence of a cyanoprotothallus is integrated in the character scoring and chlorolichens are considered cephalodiate and hence tripartite.

Juvenile, lichenized stages with *Nostoc* following ascospore dispersal and germination have been observed in several species of the Peltigerineae (Holtan-Hartwig unpubl., Ott 1988, Stocker-Wörgötter & Türk 1994, Yoshimura et al. 1993). Stocker-Wörgötter & Türk (1994) were able to resynthesise *Peltigera leucophlebia* (Nyl.) Gyeln. from its three symbionts under controlled laboratory conditions. They obtained primordia arising from a cyanobacterial crust, with the primordia comprising the mycobiont and a green photobiont, a cyanobacterial photobiont, or both photobionts, but only the primordia with green photobiont developed into *P. leucophlebia*-like thalli. Yoshimura et al. (1993) were able to “reform” a cyanobacterial morphotype of *Peltigera aphthosa* (L.) Willd. by culturing the lichen in vitro from undifferentiated cell aggregates. The lobes of the juvenile cyanobacterial morphotype was sublinear and had a cortex also on the lower side and were thus anatomically and morphologically different from the lobes of the cyanomorph of *P. aphthosa* as they are in the nature. Species of *Peltigera* do not have dendriscocauloid developmental stages, but the observations by Stocker-Wörgötter & Türk (1994) and Yoshimura et al. (1993) may be consistent with a hypothesis that the association with cyanobacteria is not simply a secondary event in the life cycle of a tripartite lichen, but rather may be a critical primary ontogenetic stage in their development.

Photosymbiodemes including a foliose photomorph and dendriscocauloid cyanomorph are known also from other species of *Ricasolia*, namely *R. amplissima* (e.g., James & Henssen 1976, Tønsberg & Goward 2001, Tønsberg & Holtan-Hartwig 1983, Tønsberg & Jørgensen 2007; all as *Lobaria amplissima*), *R. ravenelii* (Tuck.) Nyl. (as *Lobaria* cf. *erosa* (Eschw.) Nyl. in Jordan 1972; as *Lobaria ravenelii* in Brodo et al. 2001) and *R. quercizans* (Parker & Goffinet unpubl.). *Ricasolia amplissima* shows the same juvenile development as described above for *R. virens* (see Tønsberg & Goward 2001, Tønsberg & Holtan-Hartwig 1983). However, unlike *R. virens*, *R. amplissima* often develops cyanomorphs laminally on the chloromorph, and composite specimens with more than two cyanomorph/chloromorph ‘generations’ are occasionally seen. We have indeed observed free-living cyanomorphs bearing the chloromorph themselves producing the cyanomorph, as well as free living chloromorphs with attached cyanomorphs bearing the chloromorph.

In conclusion, *Ricasolia virens* is widely distributed in Europe and in Macaronesia, and cyanomorphs are currently known only from Norway. If a juvenile cyanolichen stage is obligate, it may have been overlooked, as it was until recently in Norway, especially if it is ephemeral, and vanishes as the chloromorph develops. *Ricasolia virens* cyanomorphs and photosymbiodemes were indeed lacking among herbarium specimens in BG and likely elsewhere, as collectors generally seek well-developed, fertile thalli, which may lack cyanomorphs. Discovering the dendriscocauloid juvenile stage throughout the distribution range would provide, in the absence of experimental observations, evidence for the obligatory nature of the cyanolichen in the life cycle of *R. virens*. The observation of an association with *Nostoc* in a dendriscocauloid thallus preceding the development of the chloromorph in *R. virens*, combined with similar observations in *R. amplissima* and the occurrence of photosymbiodemes in other species of *Ricasolia* may lead to the hypothesis that at least for *Ricasolia* the ancestral lichenization state is one with *Nostoc*, and that species with tripartite thalli arose from such an ancestor, while maintaining the ability to establish independent cyanomorphs, which may be required when lichenization is initiated (i.e., protothallus) and provide an alternative strategy for a perennial free living lichen (e.g., typical *Dendriscocaulon*).

*Specimens of photosymbiodemes with cyanomorphs examined (all BG). – NORWAY:*  
**HORDALAND: AUSTEVOLL:** island Huftarøy, the E-facing slope N of Bjelland, 60°04.69'N 5°15.65'E (ED50), alt. 0–30 m, corticolous on trunk of *Tilia cordata*, 18.ix.1985, T. Tønsberg 9380 (BG-L-97740).  
**BØMLO:** island Selsøy, Kastevik, 59.8959582°N 5.099804°E (EUREF 89), alt. 15 m, on boulder in *Corylus avellana* thicket, 30.vii.2006, H.H. Blom s.n. (BG-L-97745).  
**LINDÅS:** the SW-facing slope W of Storset, 60°38.439'N 5°27.116'E (Datum ED50), alt. 60–90 m, corticolous on the shaded side of trunk of *Fraxinus excelsior*, 3.iv.1984, T. Tønsberg 8595 & J. Holtan-Hartwig (BG-L-97741).  
**OS:** Storomvågen, 60°10'N 5°24'E (ED50), alt. 5 m, corticolous on trunk of *Fraxinus excelsior*, 23.iv.1989, T. Tønsberg 11522 & J. Holtan-Hartwig (BG-L-53525).  
**OSTERØY:** Havrå, S-facing slope, downhill from road,

60°26.214'N 5°33.907'E (ED50), alt. ca. 50 m, on old, pollarded trunk of *Fraxinus excelsior* in young deciduous forest, 13.vii.1992, A. Botnen s.n. (BG-L-14801); Havrå, downhill from road, 60°26.267'N 5°34.642'E (WGS84), alt. 20–40 m, corticolous on S-facing side of mossy trunk of *Fraxinus excelsior* in S-facing slope, 28.iv.2011, T. Tønsberg 40924 (BG-L-97742). **NORD-TRØNDELAGE: FLATANGER:** Årfjordbotn, the E-facing slope W of cove Survika, 64°27.422'N 10°49.380'E, alt. 10–30 m, corticolous on mossy trunk of *Populus tremula*, 19.viii.2002, T. Tønsberg 31538 (BG-L-97743).

*Specimens of chloromorphs examined for comparison.* – **GEORGIA [U.R.S.S.]:** Transcaucasus: Colchis, distr. Sochi, ad corticem *Aceris*, 8.vi.1978, A. Vězda s.n. (BG-L-64224). **NORWAY: HORDALAND: BØMLO:** island Bømlo, E side of Grutlefjorden, S of farm Hope, Rakahopet, 59.669°N 5.169°E, alt. 0–5 m, 28.iv.2015, T. Tønsberg 44757 (BG-L-97955, BM, UPS, NY); island Spyssøya, W-facing slope ca 160 m SSE (direct) from S tip of the small island Bleikja, 59°43.418'N 5°22.249'E, alt. 10–15 m, on schists on upper part of steep, seaside rock wall, 3.iv.2015, T. Tønsberg 44732 (BG-L-97760). **GRANVIN:** Nesheimlien, ad truncus vetustos *Tiliae parvifoliae*, mense Maio 1936, J.J. Havaas, *Lich. Norv. Occ. Exs. 128* (BG-L-59632). **OS:** Lysekloster monastery, just outside the W side of the ruin, 60°13.655'N 005°24.299'E, alt. 40–60 m, corticolous on trunk of huge *Ulmus glabra*, 10.ii.2015, T. Tønsberg 44718 (BG-L-97738).

*Specimen of Ricasolia amplissima examined for comparison.* – **NORWAY. HORDALAND. OS:** Lysekloster monastery, just outside the W side of the ruin, 60°13.655'N 005°24.299'E, alt. 40–60 m, corticolous on trunk of huge *Ulmus glabra*, 10.ii.2015, T. Tønsberg 44719 (BG-L-97739).

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# APPENDIX – VOUCHERS AND GENBANK DATA FOR SEQUENCES USED IN THIS STUDY

**Table 1.** Species, morph (phenotypic expression), and voucher information (i.e., country, collector and herbarium) sampled for the sequencing of the ITS region; GenBank accession numbers for newly generated sequences are in bold.

Species	Morph	Country	Voucher Specimen	GenBank Accession No.
<i>Lobaria scrobiculata</i>	?	?	<i>M.A. Thomas 1239</i> (OTA)	AF350297
<i>Ricasolia virens</i>	chloro-	Norway	<i>M. Wedin 6192</i> (BM)	<b>KJ577709</b>
<i>R. virens</i>	chloro-	Norway	<i>H.H. Blom VI</i> (BG)	<b>KJ577710</b>
<i>R. virens</i>	cyano-	Norway	-	<b>KJ577711</b>
<i>R. virens</i>	photosymb.: cyano-	Norway	<i>T. Tønsberg 40924</i> (BG)	<b>KP941424</b>
<i>R. virens</i>	photosymb.: chloro-	Norway	<i>T. Tønsberg 40924</i> (BG)	<b>KP941425</b>
<i>R. virens</i>	photosymb.: chloro-	Norway	<i>T. Tønsberg 31538</i> (BG)	<b>KP941426</b>
<i>R. virens</i>	chloro-	Norway	<i>T. Tønsberg 44757</i> (BG)	<b>KR632514</b>
<i>R. amplissima</i>	chloro-	Norway	<i>E. Stocker-Wörgötter 1717</i> (TUR)	AF524923
<i>R. amplissima</i>	cyano-	Norway	<i>H. Holien s.n.</i> (TUR)	AF524926
<i>R. quercizans</i>	?	Canada	<i>T. Ahti 57089</i> (H)	AF524921
<i>R. quercizans</i>	?	?	<i>collector unknown</i> (DUKE) [AFTOL-ID 369]	HQ650694
<i>R. subdissecta</i>	?	Colombia	<i>B. Moncada 3152</i> (UDBC)	KC011029



# Two new species of *Thelenella* and new reports from the Great Plains of central North America, with a worldwide key to the genus

CALEB A. MORSE<sup>1</sup>

**ABSTRACT.** – Two new species of *Thelenella* are described from central North America. *Thelenella calcicola* occurs on calcareous rocks in Kansas and Missouri, and produces irregularly submuriform, 7–11 × 1-septate, colorless ascospores. *Thelenella nubifera*, based on specimens previously referred to *T. luridella*, occurs on sandstone in Georgia, Kansas, Missouri, and Oklahoma, and produces muriform, 6–9 × 3–4-septate, grey or brown pigmented ascospores. A third species from northwestern South Dakota is characterized but not formally described. *Thelenella luridella* is tentatively excluded from North America. *Thelenella brasiliensis* is reported new for Kansas, southwest Oklahoma, and Texas; *T. modesta* is reported new for Kansas and North Dakota; *T. muscorum* var. *muscorum* is reported new for or Kansas and Oklahoma; and *T. pertusariella* is reported new for Kansas. A worldwide key to *Thelenella* is provided.

**KEYWORDS.** – Amyloidy, Altamaha Formation, Cross Timbers, biogeography, ecoregions, Ozarks, taxonomy.

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## INTRODUCTION

*Thelenella* Nyl. (Lecanoromycetes: Ostropomycetidae: Thelenellaceae) comprises a genus of crustose lichens with a chlorococcoid photobiont, perithecia that are often immersed and in most species lack an involucrellum, a hamathecium of slender, branched and anastomosing paraphyses and simple or branched periphysoids, thick-walled, bitunicate asci with a more or less well-developed, KI– ocular chamber, 8 or fewer, mostly colorless, submuriform to muriform ascospores, and filiform conidiospores (Mayrhofer 1987, Mayrhofer & McCarthy 1991, Fryday & Coppins 2004). The genus includes 35 corticolous, foliicolous, muscicolous, and saxicolous taxa (Mayrhofer 1987, Mayrhofer & McCarthy 1991, Harris 1995, Kalb 1995, Etayo & Mayrhofer 2003, Fryday & Coppins 2004, Pinokiyo & Singh 2006, Aptroot et al. 2015), although the inclusion of some taxa has been, or continues to be, contentious. One species, initially described as a non-lichenized *Thelenella* (Aptroot 1999), has subsequently been shown to belong to a monotypic genus in the Trypetheliaceae, *Aptrootia* Lücking & Sipman (Lücking et al. 2007). Recent inclusion of three polysporous species by Aptroot and Schumm (2012) has been rejected by Knudsen and Kocourková (2013). Transfer of several species of the mostly foliicolous genus *Aspidothelium* Vainio to *Thelenella* by Harris (1995) and Farkas and Sipman (1997) was disputed by Lücking (2008), who postulated a distant relationship between *Aspidothelium* and the remainder of the Thelenellaceae. However, molecular sequence data have not yet been generated for *Aspidothelium*, and the placement of this genus remains uncertain. Aspidotheliaceae is presently included as a family *incertae sedis* of Ascomycota by Lumbsch and Huhndorf (2009). *Thelenella* is represented in North America by 18 species (Esslinger 2015), including two species of *Aspidothelium*.

Saxicolous members of the genus typically occur on non-calcareous rocks, and most are limited to maritime or oceanic climates (Mayrhofer & McCarthy 1991), so it was surprising to find a species growing on the sheltered face of limestone outcrops along the eastern edge of the Great Plains. In reviewing other members of the genus as part of preparing a description of this taxon, it became evident that a second species found in southeastern North America, which produces distinctive, grey to brownish ascospores,

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could not be placed satisfactorily in any known *Thelenella*. Both species are described here as new to science. A third species, known from a single small specimen from South Dakota, is discussed but not formally described. In addition, several species are newly reported for Great Plains states in North America. Further, because *Thelenella* has grown considerably since Mayrhofer's (1987) revision, a worldwide key to the genus is provided.

## MATERIALS AND METHODS

Chemical analysis was conducted using standard spot tests (reagents are abbreviated following Brodo et al. (2001)) and Thin Layer Chromatography (TLC). TLC was carried out at KANU using solvent systems A and C following the methods of Orange et al. (2001). Morphological study was carried out on hand sections prepared with a razor blade and mounted in water. Medullary cells were stained with 0.3% Lugol's iodine (I) after pretreatment with 10% potassium hydroxide (K). Other microscopic characters were observed in water and images were captured with a Nikon Eclipse 80i microscope outfitted with a Lumenera INFINITY-32 digital camera and measured to the nearest 0.1  $\mu\text{m}$  with Lumenera INFINITY ANALYZE imaging software. Measurements are presented as a simple range or, where sufficient material allowed, as the average ( $\bar{x}$ )  $\pm$  one standard deviation (SD), bounded by the smallest and largest observed values, and followed by the sample size (n) (i.e., (smallest observed)  $\bar{x}-1\text{SD}-\bar{x}+1\text{SD}$  (largest observed) [n]). Taxonomic authorities are not included for the names of associated species as these can readily be obtained from Esslinger (2015).

## TAXONOMIC SECTION

### *Thelenella calcicola* C.A. Morse sp. nov.

MYCOBANK #817440.

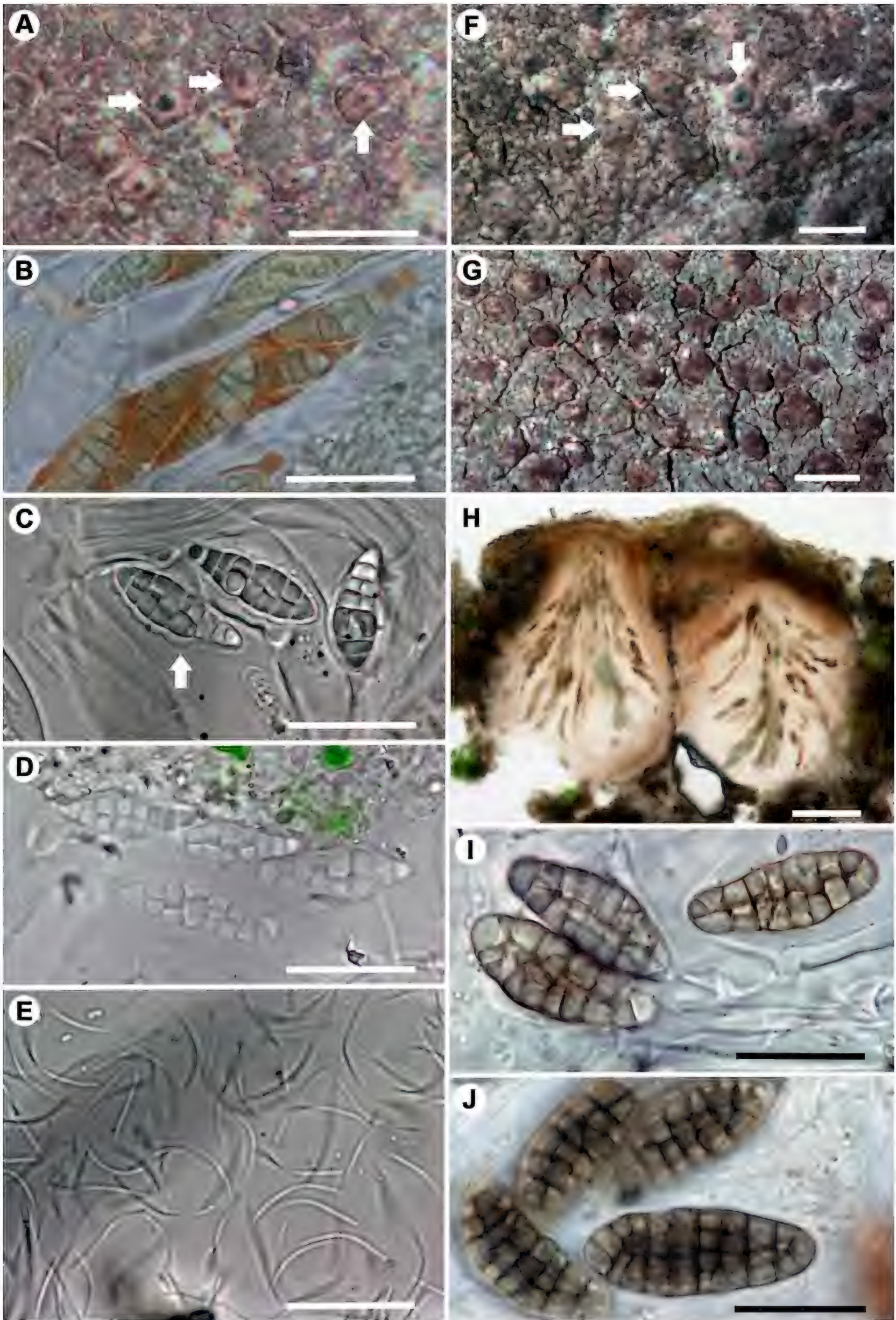
### FIGURES 1A-E.

DIAGNOSIS. – Similar to *Thelenella pertusariella* (Nyl.) Vainio, but saxicolous on calcareous rocks, with a thin, continuous thallus, and irregularly submuriform, (5) 7–11 (12)  $\times$  1 (–2)-septate ascospores, (18.5–)20.5–24.5–28.5(–33)  $\times$  (5.4–)6.3–7.3–8.3(–9.8)  $\mu\text{m}$ .

TYPE: U.S.A. KANSAS. JEFFERSON CO.: 0.7 mi S, 7.2 mi E of Williamstown, University of Kansas Ecological Reserves: Nelson Environmental Study Area and Rockefeller Experimental Tract: unit 4018, near 39.05132°N 95.19765°W, elev. 1000–1050 ft., N and NW-facing limestone outcrops and low cliffs in brushy, mesic, mixed hardwood forest on moderate slopes along WNW-trending ravine at head of unnamed tributary to Mud Creek, soil rocky, with some chert residuum along top of slope, on N-facing outcrops and boulders and base of W-facing outcrops, 18.i.2016, C.A. Morse 24956 (KANU 399092!, holotype; NY!, isotype).

DESCRIPTION. – Thallus epilithic, thin, continuous, membranous to cracked-areolate, matte or somewhat lustrous, finely mottled greenish grey and white or tan to yellowish brown, surface smooth, frequently dimpled with collapsed or eroded, greenish or brownish pigmented ascomata; medulla K/I–. Photobiont chlorococcoid, the cells (7–)9–12(–15)  $\mu\text{m}$  in diameter. Ascomata dispersed or occasionally in groups of 2–3, half-immersed in the thallus or immersed in hemispherical verrucae; verrucae 0.2–0.4 mm in diameter, concolorous with thallus except for brown ostiole, densely interspersed with colorless to brownish,  $\pm$  rectilinear crystals (these POL+ yellowish, persisting in K); involucrellum lacking. Centrum 0.15–0.3 mm in diameter, exciple ca. 20  $\mu\text{m}$  thick laterally, hyaline below, pale (reddish to greenish) brown above (dull brown in K); periphysoids simple to sparsely branching, ca. 30–36  $\times$  1.5  $\mu\text{m}$ ; paraphyses thin, ca. 1  $\mu\text{m}$  wide, abundantly branching. Asci narrowly pyriform to cylindrical, 50–85  $\times$  11–16  $\mu\text{m}$ , with (4?) 8 ascospores, KI–, with a distinct ocular chamber. Ascospores narrowly ellipsoid, spindle-shaped, or typically clavate, with the proximal (and occasionally, distal) 2–4 cells noticeably narrowed and often with pointed ends, colorless, irregularly submuriform, with (5–)7–11(–12) transverse septa and the median 1–5 cells and often the distal cell with 1 longitudinal septum each, or rarely with one median cell with 2 longitudinal septa, (18.5–)20.5–24.5–28.5(–33)  $\times$  (5.4–)6.3–7.3–8.3(–9.8)  $\mu\text{m}$ , L/W ratio = (2.4–)2.9–3.4–3.9(–4.6) [n = 53], immature ascospores occasionally with a perispore ca. 1–1.5  $\mu\text{m}$  thick. Pycnidia black, ca. 0.5 mm in diameter, upper wall with dark greyish green pigment (dull brown in K); conidia filiform, gently curved to arcuate, ca. 14–19  $\times$  < 1  $\mu\text{m}$ .







CHEMISTRY. – Spot tests of thallus with K, C, P all negative; thallus UV-. No substances detected by TLC.

ETYMOLOGY. – The epithet *calcicola* is Latin (from *calci*- limestone + *colo* to inhabit) and refers to the preferred substrate of this species.

ECOLOGY AND DISTRIBUTION. – *Thelenella calcicola* is known from a handful of sites in the Central Tallgrass Prairie and Osage Plains/Flint Hills Prairie ecoregions of eastern Kansas and western Missouri (TNC 2007; figure 2A), where it occurs on sheltered or shaded north, east, and west-facing limestone outcrops and on larger limestone boulders in mesic, mixed oak-hickory-basswood forest from 850 to 1050 feet (259–320 meters) above sea level. Associated species include *Bacidia granosa*, *B. suffusa*, *Bacidina egenula*, *Bagliettoa baldensis*, *Botryolepraria lesdainii*, *Caloplaca* sp. of Harris and Ladd (2005), *Dermatocarpon muhlenbergii*, *Endocarpon diffractellum*, *Gyalecta jenensis*, *Gyalolechia flavovirescens*, *Lecania perproxima* auct., *Lepraria finkii*, *Squamulea subsoluta*, *Verrucaria calkinsiana*, and *V. alutacea*. Given its predilection for mesic habitats, it seems unlikely that *T. calcicola* is restricted the eastern edge of the Great Plains. Its mottled thallus gives the species the aspect of the deteriorated thalli of *Bacidia granosa* or *Bagliettoa baldensis* in the field, making it easy to overlook; additional populations should be sought in appropriate habitats elsewhere in eastern North America.

DISCUSSION. – Following Mayrhofer and Poelt (1985) and Mayrhofer (1987), the ascus type of both of the species described here might best be described as *Chromatochlamys*-type, with asci typically showing a pronounced indentation of the endoascus at the tholus, at least during some stages of development. However, whether one sees the character diagnostic for *Chromatochlamys* or *Thelenella*-type asci appears to depend on the developmental stage of the ascus being observed. This agrees with earlier findings by Harris (1995), Fryday and Coppins (2004), and Schmitt et al. (2005), who pointed out that asci in members of *Thelenella*—including the type species *T. modesta* (Nyl.) Nyl.—frequently show a distinct ocular chamber, and that *Chromatochlamys* and *Thelenella*-type asci may not be discrete types.

The variably submuriform ascospores of *Thelenella calcicola* are reminiscent of those found in *T. pertusariella*, a corticolous species that often has a whitish, fleck-like thallus and tan, partially immersed ascomata (Mayrhofer 1987). *Thelenella pertusariella* is rare in the eastern Great Plains, documented from few collections on *Quercus* (Harris & Ladd 2005, and discussed below). Several other taxa produce ascospores similar to those of *T. calcicola*. *Thelenella sychnogonioides* (Zahlbr.) R. C. Harris, a corticolous species known from coastal California and New South Wales, differs in producing ascospores that are broader than those of *T. calcicola* ( $20\text{--}30 \times 7\text{--}11\text{ }\mu\text{m}$ , as *T. harrisii* H. Mayrhofer in Mayrhofer 1987), with 1–2 longitudinal septa. Another corticolous species, *T. justii* (Servit) H. Mayrhofer & Poelt, known from Greece, produces ascospores that are much longer than those of *T. calcicola* ( $35\text{--}50 \times 9\text{--}12\text{ }\mu\text{m}$  *fide* Mayrhofer & Poelt 1985) and also have 1–2 longitudinal septa. *Thelenella larbalestieri* (A.L. Sm.) Coppins & Fryday, a species on siliceous rocks known only from the United Kingdom, has a brownish thallus and ascospores that are also much longer than those of *T. calcicola* ( $44\text{--}60 \times 10\text{--}14\text{ }\mu\text{m}$  *fide* Mayrhofer & Poelt 1985; see also Fryday & Coppins 2004), and transversely septate to submuriform, with 0–2 longitudinal septa. *Thelenella vezdae* (H. Mayrhofer & Poelt) Coppins & Friday, presently known only from Austria, differs in being primarily muscicolous, or rarely corticolous on dead conifers (Mayrhofer & Poelt 1985, Fryday & Coppins 2004), as well as in having ascospores that are slightly broader than those of *T. calcicola* ( $22\text{--}30 \times 7\text{--}10\text{ }\mu\text{m}$  *fide* Mayrhofer & Poelt 1985), with 0–2 longitudinal septa.

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**Figure 1 (Page 24).** A–E, *Thelenella calcicola*. A, Thallus (Morse 24956 [holotype], KANU; arrows point to ascomata), B, mature spores in ascus, after staining with K/I (Morse 24881, KANU), C, ascospores, with halo (Morse 24956 [holotype], KANU; arrow points to distended area of halo), D, ascospores (Morse 24951, KANU), E, conidia (Morse 24961, KANU). F–J, *Thelenella nubifera*. F, specimen with tan thallus (Morse 25135, KANU [holotype]; arrows point to ascomata), G, specimen with verrucose, greenish grey thallus (Morse 24439, KANU), H, section through confluent ascomata, showing mature (grey) ascospores and overmature (brown) ascospores (Morse 24439, KANU), I, mature ascospores with 2 longitudinal septa (Morse 23280, KANU), J, mature ascospores with 3 longitudinal septa (Buck 48651, NY). Scales in A, F, and G = 1 mm; scales in B, C, D, E, I and J = 20  $\mu\text{m}$ ; scale in H = 100  $\mu\text{m}$ .

Among the saxicolous taxa documented from central North America, *Thelenella calcicola* is unique in having narrow, irregularly submuriform ascospores and in occurring on strongly calcareous substrates. *Thelenella brasiliensis* (Müll. Arg.) Vainio, which is known from a handful of Great Plains collections on non-calcareous rocks, produces muriform ascospores with 2–3 longitudinal septa, which are also broader than those of *T. calcicola* (9–13 µm wide *fide* Mayrhofer 1987). *Thelenella nubifera* (described and discussed below) differs in having larger, muriform, brown or gray spores, and in occurring on sandstone. *Thelenella sastreana* R.C. Harris, known from a few specimens collected in Puerto Rico and Louisiana, produces ascospores that are slightly broader than those of *T. calcicola* (8–11 µm *fide* Harris 1995), with 1–2 longitudinal septa. In addition to producing slightly broader, muriform ascospores, *T. sastreana* is reported to have larger asci (85–130 × 15–20 µm), and occurs on sandstone (Harris 1995).

*Additional specimens examined.* – **U.S.A. KANSAS.** DOUGLAS CO.: ca. 0.5 mi N, 5.6 mi W of Lecompton, along S side of Scenic River Rd (= N 2190 Rd), 39.05°N 95.50°W, 28.iv.2015, C.A. Morse *et al.* 24489 (KANU). JEFFERSON CO.: ca. 1 mi S, 3 mi E Ozawkie, E side of Perry Lake, along Old Military Trail, near 39.21°N 95.41°W, 11.x.2015, C.A. Morse *et al.* 24866 (KANU, hb. Ladd, NY). JOHNSON CO.: ca. 1.5 mi N, 1 mi W of Aubry, Overland Park Arboretum and Botanical Garden, 38.80°N 94.69°W, 2.xi.2015, C.A. Morse 24881 (KANU, NY). MIAMI CO.: 0.25 mi N, 2 mi E of Jingo, North La Cygne State Fishing Lake and Wildlife Area, along W side of Rockville Rd, N of intersection Rockville Rd and 399th St, 37.41°N 95.66°W, 11.xii.2015, C.A. Morse 24951 (KANU). **MISSOURI.** JACKSON CO.: Kansas City, Blue River Glades Natural Area, along E side of Blue River Rd (Blue River Co Pkwy), ca. 0.75 road miles N of intersection of Blue River Rd and E 87th St, 38.98°N 94.54°–94.53°W, 29.i.2016, C.A. Morse 24961 (KANU).

***Thelenella nubifera* C.A. Morse sp. nov.**

MYCOBANK #817441.

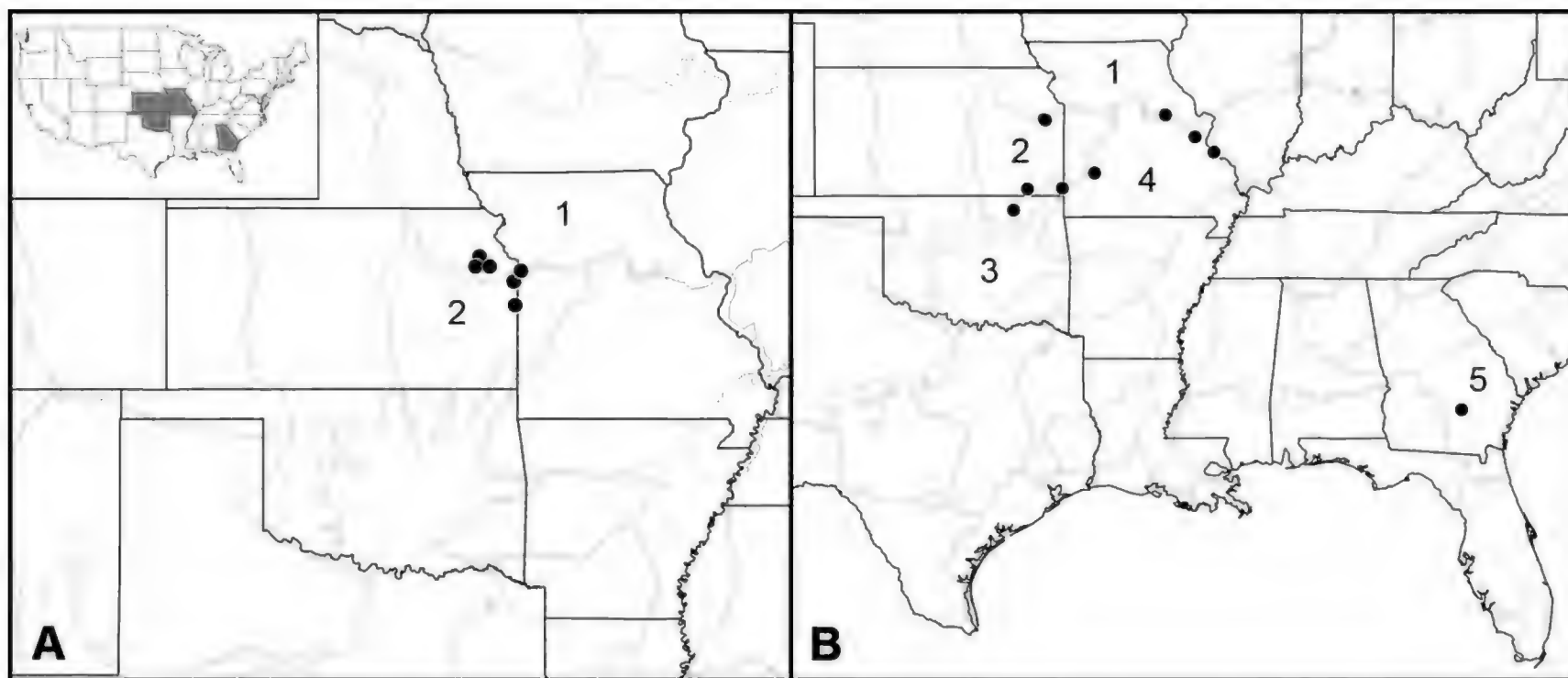
**FIGURES 1F-G.**

**DIAGNOSIS.** – Similar to *Thelenella luridella* (Nyl.) Mayrhofer, but with pale grey to brown, muriform, 6–9(–10) × (2–)3-septate ascospores, that are (24–)30–34–38(–46) × (11.1–)11.8–13.5–15.2(–17.8) µm.

**TYPE:** **U.S.A. KANSAS.** DOUGLAS CO.: ca. 0.25–0.45 mi N, 1.75 mi E jct of DG Co Rd 1055 & US Hwy 56 in Baldwin City, property of Ralph & Roma Earles, 38.78486°–38.78933°N 95.15201°–95.15531°W, elev. 970–1060 ft., complex of moderately disturbed, open mixed oak-hickory forest and woodlands on dissected, N, S and W-facing slopes above tributary to southern arm of Douglas Co. State Lake; soil sandy, with sandstone outcrops locally common in draws and on middle slopes and limestone outcrops and boulders occasional on lower slopes, on sandstone along draw on S-facing slope, 18.v.2016, C.A. Morse 25135 (KANU 399094!, holotype).

**DESCRIPTION.** – Thallus epilithic, thin (essentially chasmolithic on coarse-grained sandstones) to rather thick, membranaceous to areolate, sublustrous, greenish grey to pale grey or tan (yellowish in older specimens), surface smooth to finely verruculose; medulla K/I+ pale blue. Photobiont chlorococcoid, the cells 7–10(–15) µm in diameter. Ascomata dispersed or in groups of 2–3, borne in hemispherical verrucae; verrucae (0.2–)0.3–0.4(–0.7) mm in diameter, concolorous with thallus to more commonly contrasting and dark greyish or yellowish brown with darker brown ostiole, smooth to rough or warted, interspersed with a few large, colorless to brownish, ± rectilinear crystals (these POL+, persisting in K); involucrellum absent. Centrum 0.2–0.3 mm in diameter, exciple hyaline below, pale (reddish to greenish) brown or blue-grey above, K/I+ pale blue; periphysoids simple or sparsely branching, ca. 30 × 1.5 µm; paraphyses thin, ca. 1 µm wide, abundantly branching. Asci narrowly pyriform to cylindrical, ca. 113–164 × 28–36 µm, with (4?) 8 ascospores, KI–, with a distinct ocular chamber. Ascospores ellipsoid to elongate-ellipsoid, or occasionally broadly clavate, pale grey to brown early in ontogeny (brown when overmature), muriform, with 6–9(–10) transverse septa and (2–)3–4 ± parallel longitudinal septa, (24–)30–34–38(–46) × (11.1–)11.8–13.5–15.2(–17.8) µm, L/W ratio = (2.1–)2.2–2.5–2.8(–4.2) [*n* = 79]. Conidia not observed.

**CHEMISTRY.** – Spot tests of thallus with K, C, P all negative; thallus UV–. No substances detected by TLC.



**Figure 2.** Distribution of *Thelenella calcicola* (A) and *T. nubifera* (B); inset map: continental U.S.A. showing the states from which the new species are known. Dashed lines indicate TNC (2007) ecoregions (1 = Central Tallgrass Prairie, 2 = Osage Plains/Flint Hills Prairie, 3 = Cross Timbers, 4 = Ozarks, 5 = South Atlantic Coastal Plain).

**ETYMOLOGY.** – The epithet *nubifera* is Latin (from *nubis* cloud+ *fero* to bear) and refers to the distinctive, grey or brownish spores, which are evocative of little rain clouds.

**ECOLOGY AND DISTRIBUTION.** – *Thelenella nubifera* is known from the Central Tallgrass Prairie and Osage Plains/Flint Hills Prairie ecoregions of eastern Kansas and western Missouri, the northern Cross Timbers ecoregion in northern Oklahoma, the Missouri Ozarks, and the South Atlantic Coastal Plain ecoregion in Georgia (TNC 2007; figure 2B). It occurs on shaded or exposed chert and non-calcareous sandstone, growing on cobbles, boulders, outcrops, and cliffs from 195 to 1050 feet (60–320 meters) above sea level. Specimens from the eastern Ozarks were collected in mesic, wooded ravines and from shaded cliffs, while specimens from Kansas, western Missouri, and Oklahoma were found in open oak woodlands and in sandstone glades. The Georgia collections came from the Altamaha Grit Formation of the Broxton Rocks area. Whether the species' presence there may be taken as an indication that *T. nubifera* is more broadly distributed throughout the southeastern U.S.A. is unclear, as the Broxton Rocks are known to harbor disjunct floristic elements from the Appalachian Mountains (Griffin et al. 1994). In Kansas and Oklahoma, *T. nubifera* frequently occurs with *Fellhanera crucitignorum*, and may have similar ecological requirements through the Cross Timbers (Morse & Ladd 2013). Other associated species include *Anisomeridium distans*, *Arthonia lapidicola*, *Bacidina delicata*, *Endocarpon pallidulum*, *Fellhanera silicis*, *Ionaspis alba*, *Lepraria finkii*, *T. brasiliensis*, *Thelidium minutulum*, *Trapelia placodioides*, *Rinodina oxydata*, and *Rinodina siouxiana*.

**DISCUSSION.** – Orange et al. (2009) have observed that the medulla of *T. muscorum* (Fr.) Vainio var. *muscorum* is K/I+ pale blue, noting the utility of this character in identification of sterile material. This reaction was observed in both *T. muscorum* var. *muscorum* and *T. nubifera*, as well as in specimens of *T. brasiliensis*, *T. modesta*, and an unnamed species of *Thelenella* (*Thelenella* sp. 1 below), examined for this study. Mayrhofer (1987) found the presence of amyloid (“J+”) medullary tissue to be unique to *T. elliottii* Vainio, Harada (1999) described the thallus of *T. luridella* to be K/I-, and a K/I+ blue reaction was not observed in specimens of *T. calcicola* and *T. pertusariella* examined for this study. However, the presence of hemiamyloid tissue may be more common in the genus than published reports suggest.

Pigmented ascospores have been reported from only three other species in *Thelenella*. *Thelenella hassei* (Zahlbr.) H. Mayrhofer, a corticolous species that occurs in coastal southern California, is otherwise very similar to *T. nubifera*, differing principally in its ecology and in producing ascospores with only 2–3-

longitudinal septa (Mayrhofer 1987). A second corticolous species, *T. melanospora* Etayo & H. Mayrhofer documented from the Mediterranean region (Israel, Italy, Spain), produces smaller ascospores (18–22(–27) × 9–12 µm *fide* Etayo & Mayrhofer 2003). *Thelenella fernandeziana* (Zahlbr.) H. Mayrhofer, a saxicolous species on felsic basalt known from the Juan Fernandez Islands in Chile, produces broader ascospores (15–22 µm wide *fide* Mayrhofer 1987).

Although they are invariably pigmented pale grey to brown in the ascus, it is possible to overlook the pigmentation in very pale ascospores of the new species. In these cases, the pigment is best observed in optical section of the cell walls, or at lower magnifications (100–400×; see figure 1H). Moreover, ascospores of *Thelenella nubifera* often appear colorless very early in ontogeny, and careful examination of fully mature ascospores may be required to distinguish the species from *T. luridella*. (Indeed, several specimens cited here were initially determined as belonging to the latter species.) Ascospores of *T. luridella* are also ellipsoid to elongate-ellipsoid and broadly overlap with *T. nubifera* in size (30–45 × 12–19 µm *fide* Mayrhofer 1987), with 7–9 transverse septa and 3 or more longitudinal septa. *Thelenella luridella* has a tropical and humid subtropical distribution and has been reported from the Caribbean (Dominica, Trinidad), South America (Bolivia, Brasil), Arabian Peninsula (Socotra), southern Africa (Lesotho, South Africa), Asia (Japan, Hong Kong, Nepal), and New Zealand (Mayrhofer 1987, Mayrhofer & McCarthy 1991, Aptroot & Seaward 1999, Harada 1999, Baniya et al. 2010, McCarthy 2014). The species was reported for North America by Harris (1995), based on vouchers from Georgia, and subsequently from the Ozarks by Harris and Ladd (2005). However, these specimens are referred here to *T. nubifera*. Although one specimen determined as *T. luridella* (Mississippi, Wilkinson Co.: Harris 11488 [NY]) was not located, and thus not available for review, that species is tentatively excluded from North America.

In the field, *Thelenella nubifera* is most likely to be confused with *T. brasiliensis*, which appears to be the more common species in the region, frequently occurs in the same communities and on the same substrate types. In addition to producing smaller, colorless ascospores, *T. brasiliensis* may be distinguished from the new species by its smooth verrucae, which are largely concolorous with the thallus, brownish only in the immediate vicinity of the ostiole. In *T. nubifera*, the darkly pigmented area around the ostiole is typically more extensive. In some specimens of *T. nubifera* examined (*e.g.*, Morse 24439, see figure 2G), this pigmented area comprises the greater part of the verrucae, making them contrast strongly with the surrounding thallus.

*Additional specimens examined.* – **U.S.A. GEORGIA.** COFFEE CO.: Broxton Rocks Ecological Preserve, 9 mi NE of Broxton, 3 mi S of Ocmulgee River, 31°44'N 82°45'W, 16–17.xii.1993, R.C. Harris 32595 (NY), R.C. Harris 32596 (NY). JEFF DAVIS CO.: 0.4 mi E of Coffee County line on Georgia Hwy 107, ca. 11 mi NE of Broxton, ca. 2 mi S of Ocmulgee River, 31°45'N 82°43'W, 5.ii.1995, W.R. Buck 27509 (NY). **KANSAS.** CHEROKEE CO.: Spring River Wildlife Area, N of NE 100th St, 0.25 mi N of Old US 96, 37°10'53"N 94°38'58"W, 13.iv.2004, W.R. Buck 46423 (NY), R.C. Harris 48885 (NY). DOUGLAS CO.: ca. 0.25–0.45 mi N, 1.75 mi E jct of DG Co Rd 1055 & US Hwy 56 in Baldwin City, property of Ralph & Roma Earles, 38.79°N 95.15°W, 26.ii.2012, C.A. Morse 23280 & K.J. Morse (KANU), 24.vi.2016, C.A. Morse 25177 (KANU); 1.75 mi N, 0.5 mi W of jct of US Hwy 56 & Co Rd 1055 in Baldwin City, University of Kansas Ecological Reserves: Breidenthal Biological Reserve, 38.81°N 95.20°W, 24.x.2010, C.A. Morse 22125 & K. Logan (KANU), 14.iii.2016, C.A. Morse 25090 (KANU); 1.75 mi N, 0.75 mi W of jct of US Hwy 56 & DG Co Rd 1055 in Baldwin City, private land just N of University of Kansas Ecological Reserves Wall Woods, 38.81°N 95.20°W, 8.ii.2015, C.A. Morse et al. 24439 (KANU, NY), C.A. Morse et al. 24443 (KANU), C.A. Morse 25117 (KANU), C.A. Morse 25123 (KANU). MONTGOMERY CO.: 0.5 mi N, 5.5 mi W Liberty, S side of Montgomery Co State Lake, 37.16°N 95.70°W, 8.xi.2006, C.A. Morse 14407 (KANU). **MISSOURI.** DADE CO.: Bona Glade Natural Area, along MO 215 just E of bridge over Maze Creek Arm of Stockton Lake, 37°32'43"N 93°41'30"W, 16.iv.2005, W.R. Buck 48651 (NY). GENEVIEVE CO.: Magnolia Hollow Conservation Area, along White Sands Road, 5.5 mi NE of Hwy V, Bloomsdale Quad, 38°02'13"N 90°08'00"W, 30.iii.2006, J.C. Lendemer et al. 6741 (PH). JEFFERSON CO.: Don Robinson property, N of Sand Cut Road, ca. 1.2 mi E of Hwy NN, along tributary of La Barque Creek, “Club Moss Hollow,” 38°23'48"N 90°41'31"W, 24.iii.2006, W.R. Buck 49647 (NY). MONTGOMERY CO.: Graham Cave State Park, jct of roads to Boat Ramp and Indian Glade Campground, 38°54'17"N 91°34'47"W, 27.x.2001, W.R. Buck 40597 (NY). **OKLAHOMA.** OSAGE CO.: 7 mi N, 3 mi E Barnsdall. Woolaroc Wildlife Preserve: along small stream above Swan Lake, 36.66°N 96.11°W, 7.iv.2007, C.A. Morse 14697b & D. Ladd (KANU).



***Thelenella* sp. 1.**

Another, evidently undescribed, species is known from the Great Plains, collected once as a small admixture in northwest South Dakota. In the field, it is most likely to be confused with a species of *Staurothele* or *Verrucaria*, and thus is likely to be overlooked. A provisional description is provided below, but formal recognition of this taxon awaits additional collections.

DESCRIPTION. – Thallus epilithic, rather thick, areolate, pale grey; medulla inspersed with large crystals, K/I+ pale blue. Photobiont chlorococcoid, the cells ca. 7.5–14 µm in diameter. Ascomata mostly 1 per areole, immersed in the thallus; ostiole greenish brown, brown in K; involucrellum lacking. Centrum ca. 0.45 mm in diameter; exciple hyaline (except at ostiole), thin below, thickened to ca. 100 µm thick above, periphysoids unbranched; paraphysoids ca. 1 µm wide, branching. Asci cylindrical, ca. 73–84 × 21–23 µm, with (4?)8 ascospores, KI–, without a distinct ocular chamber. Ascospores narrowly ellipsoid to ellipsoid or broadly fusiform, colorless, muriform, 5–7 × 1–3-septate, ca. 20–33 × 8.5–14 µm. Pycnidia not observed.

ECOLOGY AND DISTRIBUTION. – *Thelenella* sp. 1 is known from a single small specimen collected from non-calcareous siltstone in an open ponderosa pine (*Pinus ponderosa*) forest on moderate to steep, west-facing slope with brushy understory at about 3420 feet (1042 meters) above sea level.

DISCUSSION. – *Thelenella* sp. 1 is unusual in producing a thick, areolate, ashy grey thallus, and appears to be ecologically distinct from other saxicolous members of the genus. The species should be compared with *T. inductula* (Nyl.) H. Mayrhofer, which has been documented from coastal southern California and eastern Arizona, as well as Macaronesia and Portugal, and which differs in producing an ochre to light reddish brown thallus (Mayrhofer 1987, 2002b). While other species examined for this study were found to be at least very pale K/I+ blue, iodine reactivity has been reported elsewhere in the genus only in the muscicolous species *T. muscorum* var. *muscorum* (Orange et al. 2009), and in *T. elliottii*, which Mayrhofer (1987) described as having a “J+” medulla. *Thelenella elliottii* is known only from the Caribbean (St. Vincent) and differs from the Great Plains specimen in producing a thin, rimose-areolate thallus and ascospores with 3–4 longitudinal septa (Mayrhofer 1987).

*Specimen examined.* — **U.S.A. SOUTH DAKOTA.** HARDING CO.: ca. 3.5 mi S, 18 mi E of Buffalo, Custer National Forest: East Half: Slim Buttes: Reva Gap: vicinity of Reva Gap Campground, below The Castles, 45.53°N 103.18°W, 10.vii.2009, C. A. Morse 19635b (KANU).

**NEW DISTRIBUTIONAL RECORDS FOR *THELENELLA* IN THE GREAT PLAINS**

In addition to the taxa described above, ongoing fieldwork has yielded a number of noteworthy distributional records for *Thelenella* in the southern Great Plains. These are briefly enumerated below.

*Thelenella brasiliensis* has been reported by Harris (1995) from New Jersey and Oklahoma, and by Harris and Ladd (2005) from the Ozarks (based on records from Arkansas, Missouri, and northeast Oklahoma). These are the first reports for Kansas, southwest Oklahoma, and Texas. Specimens were collected from cobble, boulders, outcrops, and cliffs of non-calcareous rock (fine to coarse sandstones, granite, and Sioux Quartzite) in sheltered situations in mixed-grass and tallgrass prairie, open oak-hickory woodlands, and sandstone glades.

*Specimens examined.* — **U.S.A. KANSAS.** DOUGLAS CO.: 1.75 mi N, 0.25–0.5 mi W of jct of US Hwy 56 & DG Co Rd 1055 in Baldwin City, University of Kansas Ecological Reserves: Breidenthal Biological Reserve, 38.81°N 95.19°W, 17.x.2014, C.A. Morse 24337 & A. Glauser (KANU), 14.iii.2016, C.A. Morse 25079 (KANU); 4.5 mi S, 2.25 mi W of Stull, Clinton Lake Wildlife Area: above Coblenz Marsh, 38.90°–38.91°N 95.50°–95.49°W, 28.x.2012, C.A. Morse et al. 23836 (KANU). ELLSWORTH CO.: 4 mi S, 2 mi E Carneiro, Kanopolis State Park: Horsethief Canyon area, 38.67°–38.68°N 98.00°W, 27.iv.2006, C.A. Morse 12691 & C.C. Freeman (KANU). MONTGOMERY CO.: 0.5 mi N, 5.5 mi W Liberty. S side of Montgomery Co. State Lake, 37.16°N 95.70°W, 8.xi.2006, C.A. Morse 14392b (KANU). WOODSON CO.: 6 mi E of Toronto, Woodson County State Fishing Lake & Wildlife Area on SE side, 37.79°N 95.84°W, 28.ix.2008, C.A. Morse 18057b & K. Logan (KANU), 3.ix.2011, C.A. Morse 23100 & K.J. Morse (KANU). **OKLAHOMA.** COMANCHE CO.: ca. 4.25 mi N, 2–2.5 mi W of Cache, Wichita

Mountains Wildlife Refuge: N side of Eagle Mountain and vicinity of The Narrows, 34.70°N 98.67°–98.68°W, 14–15.iv.2010, *C.A. Morse 20515c* (KANU). OKMULGEE CO.: 0.5–0.75 mi N, 6 mi W of jct of US Hwys 62 & 75 on S side of Okmulgee, Okmulgee State Park, on peninsula just N of Blackjack Area tent camping sites, 35.62°N 96.07°W, 6.ix.2009, *C.A. Morse 20203c & K. Logan* (KANU). **TEXAS.** PARKER CO.: ca. 2 mi N, 4.5 mi E jct of US Hwys 180W and 281 in Mineral Wells, Lake Mineral Wells State Park: NW side of lake, just N and E of Cross Timbers Camping Area, 32.83°N 98.04°W, 26.iv.2009, *C.A. Morse 18491b & D. Ladd* (KANU).

*Thelenella modesta* was reported by Harris (1995) from California and Minnesota and by Tucker and Egan (2009) from Texas. Ascospores examined for this study were  $(19\text{--}22\text{--}29\text{--}37) \times (8\text{--}8.5\text{--}13\text{--}16)$   $\mu\text{m}$ , slightly smaller than previously reported  $(25\text{--}42 \times 11\text{--}17 \mu\text{m})$  *vide* Mayrhofer 1987). These are the first reports for Kansas, where the species was collected from distal branches of green ash (*Fraxinus pennsylvanica*) and redbud (*Cercis canadensis*) in upland tallgrass prairie remnants, and for North Dakota, where the species was found on aspen (*Populus tremuloides*) and a large cottonwood (*P. deltoides*).

*Specimens examined.* — **U.S.A. KANSAS.** BOURBON CO.: ca. 4 mi S, 5.5 mi W of Uniontown, SW side of Bourbon Co. State Fishing Lake and Wildlife Area, 37.79°N 95.08°W, 11.xii.2015, *C.A. Morse 24948* (KANU); 3 mi S, 0.5 mi E of Fulton, Unique Prairie, 37.96°N 94.70°–94.71°W, 2.iv.2016, *C.A. Morse et al. 25098* (KANU). **NORTH DAKOTA.** ROLETTE CO.: 5.5 mi W of St. John, Wakopa Wildlife Management Area, 48.95°N 99.83°W, 24.viii.2015, *M.K. Advaita 17897-B* (KANU). TOWNER CO.: 0.5 mi E, 1.5 mi N of Cando, U.S. Waterfowl Production Area, 48.51°N 99.19°W, 22.viii.2015, *M.K. Advaita 17839* (KANU).

*Thelenella muscorum* var. *muscorum* was reported by Harris (1995) and Fryday and Coppins (2004) from Colorado, Minnesota, and North Carolina, by Mayrhofer (2002a) from Arizona, California, and northwestern Mexico, and the Ozarks (Harris & Ladd 2005, D. Ladd personal comm.). The eight-spored variety, *T. muscorum* var. *octospora* (Nyl.) Coppins & Fryday appears to be restricted to the western North America, with reports from Colorado, Idaho, Montana, Oregon, and Saskatchewan (Anderson 1962, McCune et al. 2014). *Thelenella muscorum* var. *muscorum* is new for Kansas and Oklahoma. All specimens were collected on bryophytes overgrowing sandstone in open oak-hickory woodlands.

*Specimens examined.* — **U.S.A. KANSAS.** DOUGLAS CO.: ca. 0.25–0.45 mi N, 1.75 mi E jct of DG Co Rd 1055 & US Hwy 56 in Baldwin City, property of Ralph & Roma Earles, 38.78°N 95.15°W, 18.v.2016, *C.A. Morse 25147* (KANU); 1.75 mi N, 0.5 mi W of jct of US Hwy 56 & Co Rd 1055 in Baldwin City. University of Kansas Ecological Reserves: Breidenthal Biological Reserve, 38.81°N 95.19°W, 24.x.2010, *C.A. Morse 22122 & K. Logan* (KANU), 14.iv.2015, *C.A. Morse 24470a & A. Glauser* (KANU). CHAUTAUQUA CO.: 3 mi N, 1 mi W of Hale, West Liberty Cemetery and environs, 37.28°N 96.04°W, 7.ix.2009, *C.A. Morse 20256b & K. Logan* (KANU). FRANKLIN CO.: 3 mi S, 1 mi E Homewood., Ottawa University Natural History Reservation (“Ferndale”), 38.47°N 95.36°W, 5.iii.2008, *C.A. Morse 16341a & K. Logan* (KANU). LINN CO.: 2.75 mi W of jct of KS Hwys 7 & 52 in Mound City, Dingus Natural Area, 38.13°N 94.87°W, 31.i.2009, *C.A. Morse 18236 & K. Logan* (KANU). WOODSON CO.: 6 mi E of Toronto, Woodson Co. State Fishing Lake & Wildlife Area on SE side, 37.79°N 95.84°W, 28.ix.2008, *C.A. Morse 18036 & K. Logan* (KANU), 18.iii.2012, *C.A. Morse 23327 & K.J. Morse* (KANU). **OKLAHOMA.** OSAGE CO.: 7.5 mi N, 3 mi E Barnsdall, Woolaroc Wildlife Preserve: start of nature trails area, just NW of museum complex, 36.67°N 96.11°W, 6.iv.2007, *C.A. Morse 14632b & D. Ladd* (KANU); 7.5 mi N, 3.75 mi E Barnsdall, Woolaroc Wildlife Preserve: just W of Little Rock Creek, N of outlet of Clyde Lake, 36.67°N 96.10°W, 7.iv.2007, *C.A. Morse 14802a & D. Ladd* (KANU).

*Thelenella pertusariella* was reported by Harris (1995) from Michigan and Minnesota, and by Harris and Ladd (2005) from Oklahoma. Harris (1995) noted that North American specimens produced ascospores with more septa than were found in European material. Ascospores examined for this study did not differ significantly from the description by Mayrhofer (1987), with 5–10 transverse septa and infrequent longitudinal septa (with only one or two cells in each ascospore divided longitudinally). However, ascospores were  $(16\text{--}19\text{--}26\text{--}32) \times 5.5\text{--}7.5 \mu\text{m}$ , slightly narrower than reported for the species by Mayrhofer (1987)  $(22\text{--}35 \times 7\text{--}10 \mu\text{m})$  or Harris (1995)  $(23\text{--}34 \times 7\text{--}11 \mu\text{m})$ . These are the first reports for Kansas. Both specimens were collected from oaks (*Quercus*) in mesic, mixed oak-hickory(-basswood) forest.



*Specimens examined.* — **U.S.A. KANSAS.** DOUGLAS CO.: 1.75 mi N, 0.5 mi W of jct of US Hwy 56 & DG Co Rd 1055 in Baldwin City, University of Kansas Ecological Reserves: Breidenthal Biological Reserve, 38.81°N 95.19°W, 8.ii.2009, *C.A. Morse 18256* (KANU). LEAVENWORTH CO.: Fort Leavenworth Military Reservation: W-central part, area roughly bounded by ravine 0.25 mi E of Bell Point, between reservoir (to N) and radio tower (to S), and area E of reservoir and below (E of) Hancock Hill, in vicinity of Girl and Boy Scout Camps, 39.36°–39.37°N 94.93°W, 14.v.2008, *C.A. Morse 16480b* (KANU).

## WORLDWIDE KEY TO *THELENELLA*

When measuring ascospores, users should take care to base their observations on mature ascospores, as immature ascospores are frequently smaller than the values reported in published accounts, and overmature ascospores are frequently much narrower. Further, because ascospore size is critical in determining many species of *Thelelenella*, it is important (if often difficult!) to measure a sufficient number of ascospores to ascertain the typical size range. In order to avoid confusion regarding septation and size, counts of the number of transverse and longitudinal septa are separated by a slash [ / ], while indications of length and width are separated here by a multiplication sign [ × ]. Thus, a species with muriform ascospores with 7 to 10 transverse septa and 3 to 4 longitudinal septa will be indicated as “ascospores 7–10 / 3–4-septate”. Species with transversely septate to submuriform ascospores are indicated in the same way, so it is important to bear in mind that “ascospores 7–10 / 0–2-septate” means that some ascospores may be transversely septate only. Measurements and distributional information were taken principally from Mayrhofer (1987) and Harris (1995), and supplemented by descriptions in Santesson (1952), Mayrhofer and Poelt (1985), Mayrhofer and McCarthy (1991), Kalb (1995), Harada (1999), Seaward and Aptroot (2000), Etayo and Mayrhofer (2003), Fryday and Coppins (2004), Pinokiyo and Singh (2006), Lücking (2008), Kinalioglu and Aptroot (2011), Aptroot et al. (2014), and McCune et al. (2014). Distributions are specified to the best of the author’s ability, especially for seldom-collected taxa and for species with documented ranges in North America. Unfortunately, many taxa remain very poorly known, so both measurements and distributional information must be regarded with caution. Some distinctions between species remain uncertain, and additional fieldwork is needed to characterize the range of morphological and ecological variability among members of the genus.

1. Muscicolous ..... 2
  2. Ascospores 7–8 / 0–1-septate, 22–30 × 7–10 µm; Europe (Austria) ..... *T. vezdae* (H. Mayrhofer & Poelt) Coppins & Friday
  2. Ascospores richly muriform, ≥ 40 × 15 µm ..... 3
    3. Ascospores 2–4 per ascus, ca. 21 / 2–7-septate, 60–100 × 20–27 µm; northern Africa (Tunisia), Europe (broadly distributed), North America (U.S.A.: broadly distributed)..... *T. muscorum* (Fr.) Vainio var. *muscorum*
    3. Ascospores 6–8 per ascus, 11–14 / 1–3-septate, 40–60 × 15–20 µm; northern Europe, North America (Canada: Saskatchewan, northwest U.S.A.: Idaho, Oregon) ..... *T. muscorum* var. *octospora* (Nyl.) Coppins & Fryday
1. Not muscicolous (corticulous, foliicolous, or saxicolous) ..... 4
  4. Saxicolous ..... 5
    5. Ascospores ≥ 30 µm long (species with largest ascospore 32 [36] µm long key both ways) ..... 6
      6. Involucrellum present ..... 7
        7. Ascospores 5–7 / 3-septate, 20–32 × 10–16 µm; Subantarctic islands (Kergulen, Marion, Heard islands)..... *T. kerguelena* (Nyl.) H. Mayrhofer
        7. Ascospores ≥ 7 / 3-septate, ≥ 34 × 14 µm ..... 8
          8. Thallus pale greenish grey; ascospores 12–16 / 3–4 septate, 34–52 × 14–20 µm; Antarctic islands (Bouvet and South Georgia islands), Subantarctic islands (Kergulen, Heard, Macquaire islands) ..... *T. mawsonii* (C.W. Dodge) H. Mayrhofer & P.M. McCarthy
          8. Thallus ochre to light grey-brown; ascospores 7–11 / 3 septate, 35–47 × 14–19 µm; western North America (Mexico: Baja California, U.S.A.: California) ..... *T. weberi* H. Mayrhofer
      6. Involucrellum absent ..... 9

9. Ascospores pigmented grey or brown early in ontogeny ..... 10
10. Thallus light brown to grey brown; ascospores 7–9 / 2–5?–septate, 30–45 × 15–22 µm; on felsic basalt; western South America (San Juan Fernandez Islands) ..... *T. fernandeziana* (Zahlbr.) H. Mayrhofer
10. Thallus tan to greenish grey; ascospores 6–9(–10) / 3–4–septate, (24–)30–38(–46) × (11.1–)11.8–15.2(–17.8) µm; on sandstone; southeast North America (U.S.A.: Kansas, Missouri, Oklahoma, Georgia) ..... *T. nubifera* C.A. Morse
9. Ascospores colorless (although overmature ascospores may become brown) ..... 11
11. Ascospores transversely septate to submuriform ..... 12
12. Ascospores 11–14 / 0–2 septate, 44–60 × 10–14 µm; on siliceous rocks; western Europe (United Kingdom) ..... *T. larbalestieri* (A.L. Sm.) Coppins & Fryday
12. Ascospores (5–)7–11(–12) / 1(–2)–septate, (18.5–)21–29(–33) × (5.4–)6.3–8.4(–9.8) µm; on calcareous rocks; central North America (U.S.A.: Kansas, Missouri)..... *T. calcicola* C.A. Morse
11. Ascospores muriform, with 3 or more longitudinal septa ..... 13
13. Ascospores broadly ellipsoid, 7–11 / 3–4–septate, 20.5–35.5 × 12–18.5 µm; Oceania (southern Australia: Bass Strait Islands, Tasmania) ..... *T. tasmanica* H. Mayrhofer & P.M. McCarthy
13. Ascospores elongate-ellipsoid to subcylindric to spindleform, ≥ 30 µm long . ..... 14
14. Ascospores with 7–9 / 3+–septate, 30–45 × 12–19 µm; southern Africa (Lesotho, South Africa), southern Asia (Arabian Peninsula: Socotra, Japan, Hong Kong, Nepal), Caribbean (Dominica, Trinidad), southern South America (Bolivia, Brazil), southeast Oceania (New Zealand) ..... *T. luridella* (Nyl.) Mayrhofer
14. Ascospores with 9–17 / 3–5–septate, ≥ 40 µm long ..... 15
15. Ascocarp 0.2–0.4 mm in diameter; ascospores 9–13 / 3–septate, 40–55 × 14–20 µm; southern Asia (Indonesia: Java) ..... *T. marginata* (Groenh.) H. Mayrhofer
15. Ascocarp 0.5–1 mm in diameter; ascospores 11–17 / 3–5–septate, 50–82 × 22–33 µm; Antarctic (South Shetland Islands) ..... *T. antarctica* (M. Lamb) Ericksson
5. Ascospores ≤ 30 (36) µm long ..... 16
16. Involucrellum present; ascospores 5–7 / 3–septate, 20–32 × 10–16 µm; Subantarctic islands (Kergulen, Marion, Heard islands) ..... *T. kerguelena*
16. Involucrellum absent ..... 17
17. Ascospores transversely 3–septate, 18–23 × 6.5–7.5 µm; Caribbean (Puerto Rico) ..... *Thelenella* sp. Buck 18291A of Harris (1995)
17. Ascospores submuriform or muriform ..... 18
18. Ascospores irregularly submuriform, (5–)7–11(–12) / 1(–2)–septate, (18.5–)21–29(–33) × (5.4–)6.3–8.4(–9.8) µm; on calcareous rocks; central North America (U.S.A.: Kansas, Missouri) ..... *T. calcicola*
18. Ascospores muriform, with 2 or more longitudinal septa; on non-calcareous rocks ..... 19
19. Ascospores 6–7 / 2–3 septate, 18–20 × 8–11 µm; eastern North America (U.S.A.: New York) ..... *T. humilis* R. C. Harris
19. Ascospores 20–30 (36) µm long ..... 20
20. Ascospores broadly ellipsoid, 20.5–35 × 10–18.5 µm wide, with 3–4 longitudinal septa ..... 21
21. Thallus pale to dark greenish grey to grey-brown; ascospores 7–11 / 3–4–septate, 20.6–35.3 × 11.8–18.5 µm; Oceania (southern Australia: Bass Strait Islands, Tasmania) ..... *T. tasmanica*
21. Thallus whitish to yellowish grey; ascospores 6–7 / 3–4 septate, 22–27 × 10–14 µm; on volcanic rock; Caribbean (St. Vincent) ..... *T. elliottii* Vainio

20. Ascospores elongate-ellipsoid,  $\leq 8\text{--}13\ \mu\text{m}$  wide, with 1–3 longitudinal septa ..... 22
22. Ascospores 6–9 / 1–2 septate,  $20\text{--}27 \times 8\text{--}11\ \mu\text{m}$ , with  $\pm$  pointed ends; Caribbean (Puerto Rico), southern North America (U.S.A.: Louisiana)..... *T. sastreana* R.C. Harris
22. Ascospores 5–8 / 1–3 septate,  $9\text{--}14\ \mu\text{m}$  wide, with  $\pm$  rounded ends . ..... 23
23. Thallus thick, rimose-areolate to areolate ..... 24
24. Thallus ochre to pale reddish brown; ascospores 6–8 / (1)2–3+-septate,  $24\text{--}36 \times 9\text{--}13\ \mu\text{m}$ ; on lava, granite, schist, slate; southwest Europe (Portugal), Macaronesia, southwest North America (U.S.A.: Arizona, California) ..... *T. inductula* (Nyl.) H. Mayrhofer
24. Thallus ashy grey; ascospores 5–7 / 1–3-septate,  $20\text{--}32 \times 9\text{--}14\ \mu\text{m}$ ; on non-calcareous siltstone; central North America (U.S.A: South Dakota) ..... *Thelenella* sp. 1 of this paper
23. Thallus thin, membranaceous to rimose ..... 25
25. Thallus pale ochre to yellow-brown, membranous-rimose, matt; ascomata 0.5–0.8 mm in diameter; ascospores 5–7 / 2–3-septate,  $24\text{--}30 \times 9\text{--}13\ \mu\text{m}$ ; northern Europe (Svalbard), northeast North America (Canada: Ellesmere Island; Greenland: Disko Island) ..... *T. sordidula* (Th. Fr.) H. Mayrhofer
25. Thallus pale brown, olive-brown, or olive-green, membranous to membranous-rimose, matt to glossy; ascomata 0.2–0.4 mm in diameter; ascospores 6–7 / 2+-septate,  $20\text{--}32 \times 9\text{--}13\ \mu\text{m}$ ; western Africa, Asia (China?), Central America (Costa Rica), South America (Brazil), eastern North America (U.S.A.: Arkansas, Kansas, Missouri, New Jersey, Oklahoma, Texas).....*T. brasiliensis* (Müll. Arg.) Vainio
4. Species corticolous or foliicolous ..... 26
26. Species corticolous ..... 27
27. Involucrellum present; ascospores transversely 11–19-septate, fusiform,  $50\text{--}100 \times 14\text{--}19\ \mu\text{m}$ ; Central America (Costa Rica, Panama), southern North America (Mexico: Veracruz, U.S.A.: Florida), South America (Brazil, Paraguay) ..... *T. geminipara* (Malme) R. C. Harris [= *Aspidothelium geminiparum* (Malme) R. Sant.]
27. Involucrellum absent (although ascoma wall reported to be carbonized in *A. lateralis*); ascospores irregularly transversely septate, submuriform to muriform (transversely septate to submuriform in *A. lateralis*),  $\leq 60\ \mu\text{m}$  long ..... 28
28. Ascospores becoming grey or brown early in ontogeny, muriform with 2–4 longitudinal septa ..... 29
29. Ascospores  $25\text{--}40 \times 10\text{--}17\ \mu\text{m}$ ; southwest North America (U.S.A.: California) ..... *T. hassei* (Zahlbr.) H. Mayrhofer
29. Ascospores  $18\text{--}22(\text{--}27) \times 9\text{--}12\ \mu\text{m}$ ; Mediterranean (Israel, Italy, Spain)..... *T. melanospora* Etayo & H. Mayrhofer
28. Ascospores colorless (although overmature ascospores may become brown), septation various ..... 30
30. Ascospores with 11–15 transverse septa,  $35\text{--}60\ \mu\text{m}$  long ..... 31
31. Ascospores submuriform, with 1–2 longitudinal septa,  $35\text{--}50 \times 9\text{--}12\ \mu\text{m}$ , with pointed ends; southern Europe (Greece) ..... *T. justii* (Servít) H. Mayrhofer & Poelt
31. Ascospores muriform, with 3 longitudinal septa,  $42\text{--}60 \times 13\text{--}19\ \mu\text{m}$ , with rounded ends; southern Asia (Indonesia), South America (Paraguay) ... *T. paraguayensis* Malme
30. Ascospores with 6–10 transverse septa,  $\leq 42\ \mu\text{m}$  long ..... 32



32. Ascospores muriform, with 1–4 longitudinal septa, and  $\geq 9 \mu\text{m}$  wide ..... 33
33. Thallus greyish green; ascospores ellipsoid, 6–8 / 1–3-septate,  $20\text{--}28 \times 9\text{--}15 \mu\text{m}$ ; Caribbean (Jamaica) ..... *T. follmannii* Kalb
33. Ascospores 7–9 / 2–4-septate,  $\geq 25 \times 11 \mu\text{m}$  ..... 34
34. Thallus yellowish grey, greyish brown, or brownish; asci cylindrical to clavate; ascospores ellipsoid to elongate-ellipsoid, with 2–3 longitudinal septa,  $25\text{--}42 \times 11\text{--}17 \mu\text{m}$ ; northern Africa (Morocco), Asia (Israel, Turkey), Australia, Europe (broadly distributed), Indian Ocean (Chagos Archipelago), western North America (U.S.A.: California, Kansas, Minnesota, North Dakota, Texas) ..... *T. modesta* (Nyl.) Nyl.
34. Thallus whitish to olivaceous; asci obclavate to pyriform; ascospores ovoid, with 2–4 longitudinal septa,  $30\text{--}38 \times 13\text{--}15 \mu\text{m}$ ; southeast North America (U.S.A.: Florida) ... *T. rappii* R. C. Harris
32. Ascospores transversely septate to (irregularly) submuriform, with 0–2 longitudinal septa, and  $\leq 11 \mu\text{m}$  wide ..... 35
35. Ascomata 0.4–0.55 mm in diameter; ostiole lateral; ascospores 7–9 / 0–2-septate,  $27\text{--}32 \times 9\text{--}10.5 \mu\text{m}$ ; South America (Brasil)..... *T. lateralis* Aptroot & M. Cáceres
35. Ascomata  $\leq 0.4$  mm in diameter; ostiole apical; ascospores various; distribution various (but not known from South America).. ..... 36
36. Species corticolous on dead spruce or muscicolous on dead mosses; thallus whitish or brownish; ascospores 7–8-transversely septate, with 0–1 longitudinal septa,  $22\text{--}30 \times 7\text{--}10 \mu\text{m}$ ; central Europe (Austria) ..... *T. vezdae*
36. Species corticolous; ascospores submuriform to muriform, with 1–2 longitudinal septa; distribution various ..... 37
37. Thallus indistinct, fleck-like to membranous-cracked, dirty whitish to yellowish; ascomata 0.2–0.4 mm in diameter; ascospores 6–10 / 1–2-septate,  $22\text{--}35 \times 7\text{--}10 \mu\text{m}$  [central North American specimens (16–)19–26 (32)  $\times 5.5\text{--}7.5 \mu\text{m}$ ]; Europe (Austria, Finland, Norway, Russia, Sweden, Switzerland), central North America (U.S.A.: Kansas, Michigan, Minnesota, Oklahoma) ..... *T. pertusariella* (Nyl.) Vainio
37. Thallus discontinuous to membranous or membranous-cracked, light brown to light grey; ascomata 0.1–0.3 mm in diameter; ascospores 6–7 / 1–2-septate,  $20\text{--}30 \times 7\text{--}11 \mu\text{m}$ ; southwest North America (U.S.A.: California), Oceania (southeast Australia: New South Wales)..... *T. sychnogonioides* (Zahlbr.) R. C. Harris
26. Species foliicolous ..... 38
38. Ascospores transversely septate with  $\geq 11$  septa and  $\geq 50 \mu\text{m}$  long ..... 39
39. Involucrellum present; ascospores transversely 11–19-septate, fusiform,  $50\text{--}100 \times 14\text{--}19 \mu\text{m}$ ; Central America (Costa Rica, Panama), southern North America (Mexico: Veracruz, U.S.A.: Florida), South America (Brazil, Paraguay) ..... *T. geminipara*
39. Ascospores 15–29-transversely septate,  $50\text{--}90 \times 12\text{--}20 \mu\text{m}$ ; Central America (Costa Rica, Guatemala, Honduras, Panama), southern North America (Mexico: Oaxaca, Veracruz, U.S.A.: Florida), South America (Brazil, Ecuador, French Guiana, Guyana, Peru) ..... *T. fugiens* (Müll. Arg.) R. C. Harris [= *Aspidothelium fugiens* (Müll. Arg.) R. Sant.]
38. Ascospores submuriform or muriform, with at least 1 longitudinal septum OR (if transversely septate)  $\leq 40 \mu\text{m}$  long ..... 40

40. Ascomata 0.15–0.18 mm in diameter; ascospores 3–7 / 0–2-septate, (16) 25–40 × 7–12 µm; southern Asia (India) ..... *T. indica* Pinokiyo & Kr.P. Singh
40. Ascomata ≥ 0.2 mm in diameter; ascospores ≥ 8 / 1-septate, ≥ 34 × 12 µm; distribution various (but not known from India) ..... 41
41. Involucrellum present ..... 42
42. Ascomata 0.3–0.5 mm in diameter; ascospores 20 × 1–3-septate, 35–70 × 15–25 µm; Central America (Costa Rica, El Salvador), southern North America (U.S.A.: Florida), South America (Brazil, Ecuador, Peru) .....  
..... *T. cinerascens* (Vainio) R. C. Harris [= *Aspidothelium cinerascens* Vainio]
42. Ascomata 0.2–0.3 mm in diameter; ascospores 17–20 × 1–3-septate, 35–45 × 12–20 µm; Central America (Costa Rica, Guatemala), South America (Ecuador) .....  
..... *T. trichothelioides* (Serús. & Vězda) R.C. Harris  
[= *Aspidothelium trichothelioides* Serús. & Vězda]
41. Involucrellum absent ..... 43
43. Ascomata 0.4–0.6 mm in diameter; ascospores 8–17 / 1–4-septate, 35–64 × 13–20 µm, ellipsoid; northern Oceania (New Guinea) .....  
..... *T. verruculosa* (R. Sant.) ined. (see Farkas & Sipman 1997)  
[= *Aspidothelium verruculosum* R. Sant.]
43. Ascomata 0.3–0.4 mm in diameter; ascospores 11–15 / 2–3-septate, 45–65 × 17–23 µm, elongate to spindleform; western Africa (Tanzania) .....  
..... *T. fusispora* Vězda & H. Mayrhofer

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# Further contributions to the knowledge of lichenicolous fungi and lichenicolous lichens of the Northwest Caucasus, Russia

MIKHAIL P. ZHURBENKO<sup>1</sup> AND ANASTASIYA A. KOBZEVA<sup>2</sup>

**ABSTRACT.** – Fifty-nine species of lichenicolous fungi are reported from the Northwest Caucasus. *Abrothallus stroblii*, *Acremonium antarcticum*, *Arthonia coronata* and *Sclerococcum serusiauxii* are new to Asia and Russia. *Lichenopeltella cladoniarum* is new to Asia. *Cercidospora stenotropae*, *Cladophialophora parmeliae*, *Clypeococcum cladonema*, *Intralichen lichenum*, *Lichenocodium aeruginosum* and *L. cargillianum* are new to Russia. *Arthonia clemens*, *Cercidospora* cf. *macrospora*, *Cornutispora lichenicola*, *Lichenopeltella cetrariicola*, *Niesslia cladoniicola*, *Phaeopyxis punctum*, *Roselliniella cladoniae*, *Sphaerellothecium abditum*, *Stigmidium hafellneri*, *S. solorinarium* and *Zwackhiomyces berengerianus* are new to the Caucasus. *Cetrelia* is a new host genus for *Lichenocodium cargillianum*, *Flavoparmelia* for *Clypeococcum cladonema*, *Megaspora* for *Pyrenidium actinellum* s.l., and *Cladonia chlorophaea* s.l. and *C. coniocraea* are both new host species for *Niesslia cladoniicola*.

**KEYWORDS.** – Biodiversity, biogeography, ecology, Asia.

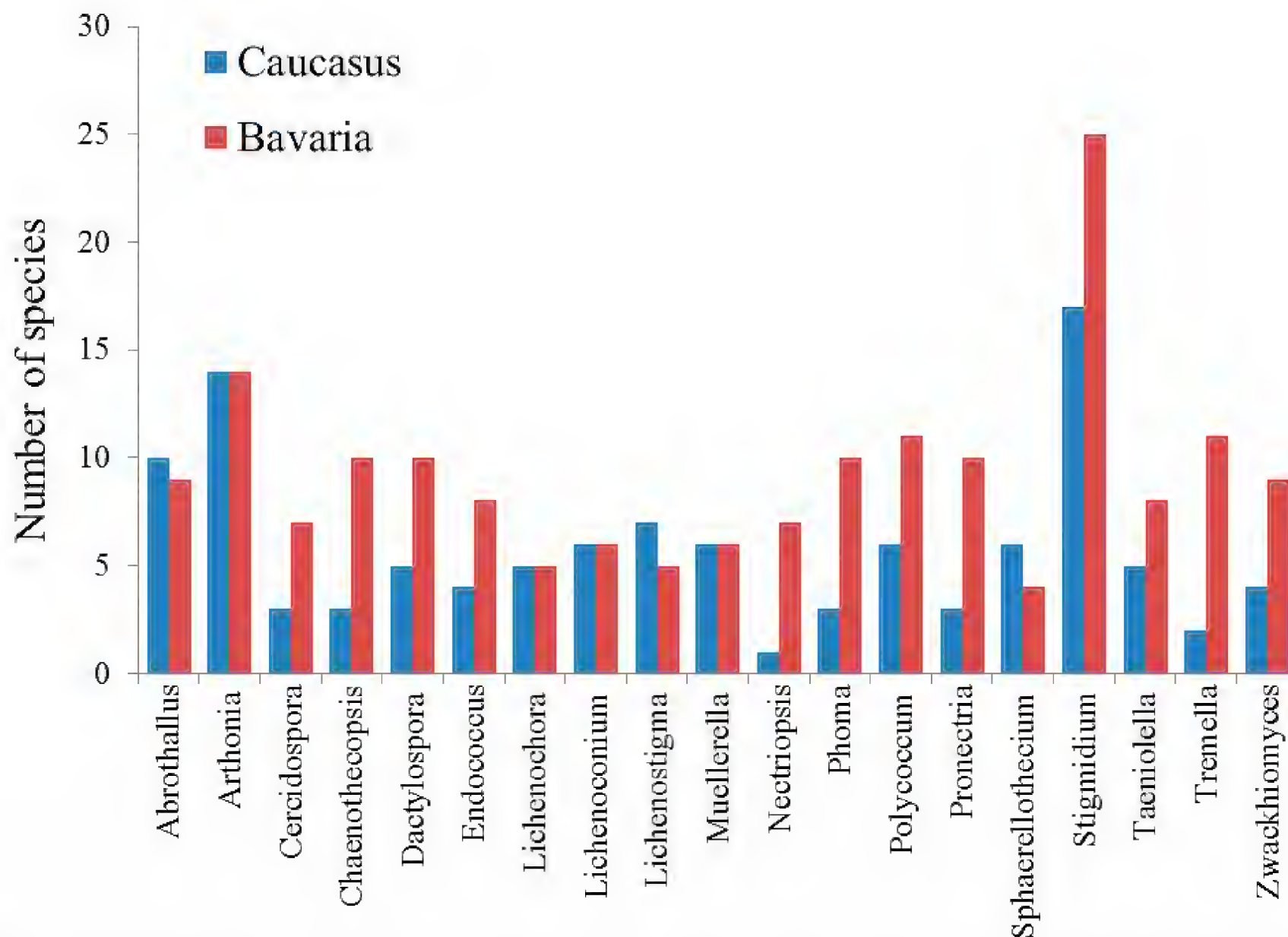
## INTRODUCTION

Knowledge of lichenicolous fungi of the Caucasus has recently been summarized by Zhurbenko and Otte (2012) in a synopsis comprising 72 species, which illustrated that the group has long been neglected in that region. To fill that knowledge gap a special project supported by the Russian Foundation for Basic Research was initiated that has already resulted in a number of publications (Zhurbenko & Kobzeva 2014; Zhurbenko et al. 2015b, c). Additional information on the subject has also recently been published by Urbanavichus and Ismailov (2013), Urbanavichene and Urbanavichus (2014) and Urbanavichus and Urbanavichene (2012; 2014; 2015a, b). Here we contribute further information on lichenicolous fungi of the region and increase the overall diversity known from the Caucasus to 210 species in 90 genera. It is noteworthy that the documented diversity of lichenicolous fungi in the biogeographically comparable region of Bavaria is approximately 370 species in 135 genera (Brackel 2014), which suggests that lichenicolous mycobiota of the Caucasus is still far from being completely understood. Indeed, assuming that the levels of diversity would be similar for different taxonomic groups in the two regions, a comparison of the most speciose lichenicolous genera in Bavaria and the Caucasus suggests additional species remain to be found in such genera as *Cercidospora*, *Chaenothecopsis*, *Dactylospora*, *Endococcus*, *Nectriopsis*, *Phoma*, *Polycoccum*, *Pronectria*, *Stigmidium*, *Taeniolella* and *Tremella* (Figure 1).

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**Figure 1.** Bar graph comparing the number of species in the most speciose genera of lichenicolous fungi reported from Bavaria by Brackel (2014) and from the Caucasus (see references and data presented herein).

## MATERIALS AND METHODS

This study is based on 105 specimens of lichenicolous fungi and lichens mainly collected by the first author in the Caucasian Biosphere Reserve, Northwest Caucasus (Figure 2). Examined specimens are housed in the mycological herbarium of the V.L. Komarov Botanical Institute in St.-Petersburg, Russia (LE). Microscopical examination was carried out using a Zeiss microscope Axio Imager A1 equipped with Nomarski differential interference contrast optics (DIC) in water, 10% KOH (K), Lugol's iodine, directly (I) or after a KOH pre-treatment (K/I), or brilliant cresyl blue (BCr). The length, breadth and length/breadth ratio (l/b) of asci, ascospores and conidia are given (where  $n > 10$ ) as: (min–){X–SD}–{X+SD}(–max), where “min” and “max” are the extreme observed values, X the arithmetic mean and SD the corresponding standard deviation. Measurements were taken from water mounts, unless otherwise indicated.

Rather than repeat the full data for the twenty-one localities from which specimens were collected these data are summarized below. The localities are referenced in the text by the numerical abbreviation that appears in bold on the list.

### Summary of collecting localities

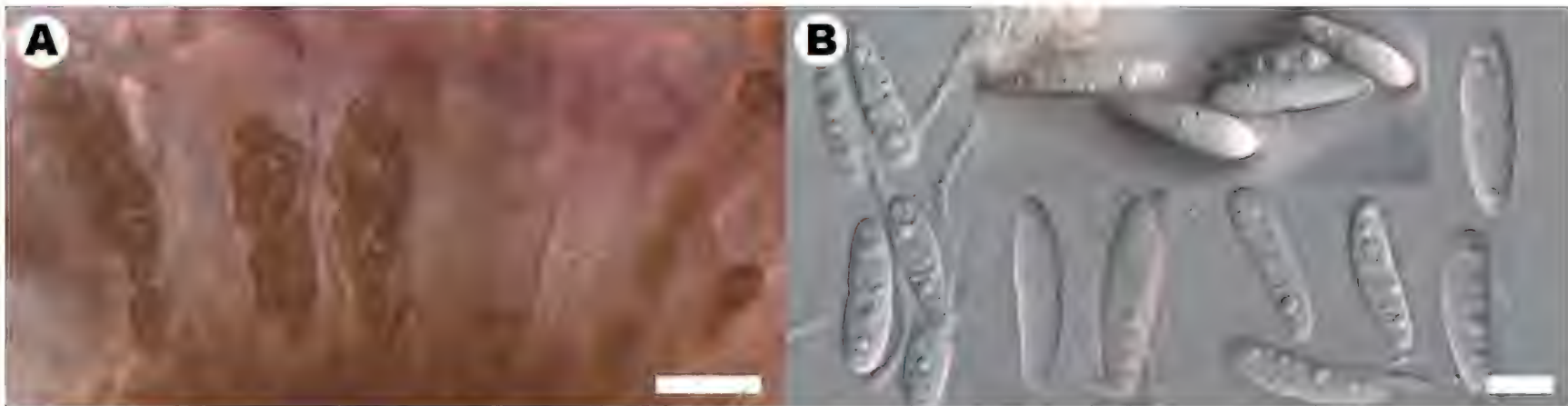
- 1: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, northeastern spur of Mt. Tybga, 43°52'48"N, 40°15'59"E, elev. 2480 m, alpine vegetation and siliceous rocks.
- 2: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, vicinity of Mt. Tybga, 1 km NE of Turovyi cabin, 43°54'03"N, 40°16'38"E, elev. 2040 m, *Betula litvinovii* forest.
- 3: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Abago pastureland boundary, Mt. Ekspeditsiya, 43°54'48"N, 40°15'43"E, elev. 1950 m, *Pinus sylvestris* ssp. *kochiana* forest and siliceous rocks among mountain meadows.



**Figure 2.** Location of the study area within the broader context of Europe and Asia.

- 4: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Abago pastureland boundary, Dom Kotova cabin, 43°56'55"N, 40°12'31"E, elev. 1770 m, *Fagus orientalis*-*Abies nordmanniana*-*Acer trautvetteri* forest.
- 5: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, vicinity of Guzeripl' settlement, 44°00'05"N, 40°08'21"E, elev. 680 m, *Fagus orientalis*-*Carpinus betulus* forest.
- 6: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, vicinity of Guzeripl' settlement, near the junction of Filimonov Creek and Molchepa River, 43°59'25"N, 40°08'56"E, elev. 770 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 7: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Belaya River 2 km upstream of Guzeripl' settlement, 43°59'21"N, 40°07'28"E, elev. 680 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 8: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, confluence of Belaya and Armyanka Rivers, 43°56'85"N, 40°06'18"E, elev. 674 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 9: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, confluence of Belaya and Rufabgo Rivers, 44°15'48"N, 40°10'19"E, *Fagus orientalis* forest.
- 10: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Lagonaki Upland, Azishskii pass, 44°04'33"N, 40°00'58"E, elev. 1750 m, mixed forest with *Abies nordmanniana*.
- 11: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, Lagonaki Upland, Armyanskii pass, 43°58'15"N, 39°56'30"E, elev. 1750 m, *Fagus orientalis* forest.
- 12: Russia, Republic of Adygeya, Caucasian Biosphere Reserve, headwaters of Armyanka River, 44°00'33"N, 39°59'42"E, elev. 1680 m, *Fagus orientalis*-*Abies nordmanniana* forest.
- 13: Russia, Krasnodar Territory, Caucasian Biosphere Reserve, Lagonaki Upland, foot of Mt. Fisht at the headwaters of Belaya River, 43°57'34"N, 39°55'48"E, elev. 1580 m, *Abies nordmanniana*-*Betula litwinowii*-*Acer trautvetteri*-*Sorbus aucuparia* forest and calcareous rocks.
- 14: Russia, Krasnodar Territory, Caucasian Biosphere Reserve, Lagonaki Upland, southeastern spur of Mt. Fisht, near Malyi Fishtinskii glacier, 43°57'08"N, 39°55'42"E, elev. 1640 m, *Abies nordmanniana*-*Betula litwinowii*-*Acer trautvetteri*-*Sorbus aucuparia* forest and calcareous rocks.
- 15: Russia, Krasnodar Territory, Caucasian Biosphere Reserve, Lagonaki Upland, between Mt. Fisht and Mt. Pshekho-Su, 43°58'16"N, 39°54'23"E, elev. 2170 m, alpine vegetation.





**Figure 3.** A, ascomata of *Abrothallus stroblii* in cross section (in water; LE 309428). B, ascospores of *Cercidospora* cf. *macrospora* (in water; LE 264366). Scale bars = 10  $\mu$ m.

- 16:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, confluence of Urushten and Malaya Laba Rivers, Chernorech'e cabin, 43°55'59"N, 40°41'01"E, elev. 800 m, open rocks beside a road in *Fagus orientalis* dominated forest.
- 17:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, N spur of Mt. Armovka, 43°55'10"N, 40°40'28"E, elev. 1150 m, *Fagus orientalis* forest.
- 18:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, northern spur of Mt. Armovka, 43°53'27"N, 40°39'47"E, elev. 1830 m, *Betula litwinowii* forest.
- 19:** Russia, Krasnodar Territory, Caucasian Biosphere Reserve, northern spur of Mt. Armovka, 43°52'28"N, 40°39'20"E, elev. 2250 m, alpine vegetation and siliceous rocks.
- 20:** Russia, Krasnodar Territory, 1 km S of Dzhankhot settlement, top of Mt. Svyatoi Niny, 44°27'34"N, 38°09'49"E, elev. 330 m, *Quercus petraea*-*Pinus brutia* var. *pityusa* forest.
- 21:** Russia, Krasnodar Territory, 15 km SE of Gelendzhik, Zhane River valley, "valley of 1000 mounds", 44°33'13"N, 38°15'01"E, elev. 150 m, *Fagus orientalis*-*Carpinus caucasica*-*C. orientalis* forest.

### THE SPECIES

The annotated list of new and interesting records is presented below and arranged alphabetically by genus and species. Lichenicolous lichens are denoted by an asterisk (\*).

#### *Abrothallus bertianus* De Not.

NOTES – According to Lawrey and Diederich (2016) this species is restricted to the lichen genus *Melanelixia*, however, it has also been recorded on some other lichen genera including *Tuckermannopsis* (Brackel 2014, Cole & Hawksworth 2001, Santesson et al. 2004). The species has been previously reported in Asian Russia from the Caucasus, Yamal-Nenets Autonomous Area, Trans-Baikal Territory, Khabarovsk Territory and Jewish Autonomous Region (Zhurbenko 2008, 2014; Zhurbenko & Otte 2012; Zhurbenko & Tugi 2013; Zhurbenko & Yakovchenko 2014).

*Specimen examined* – **13:** on *Tuckermannopsis sepincola* (apothecia, thallus), 18.viii.2014, P.M. Zhurbenko s.n. (LE 264406a).

#### *Abrothallus peyritschii* (Stein) I. Kotte

NOTES – The species was formerly known in the Caucasus from an old record published by Vainio (1899) from the Republic of North Ossetia-Alania and a recent report from Republic of Adygeya (Urbanavichus & Urbanavichene 2014). Here it is newly reported for Krasnodar Territory of Russia. It is further known in Asian Russia only from the Trans-Baikal and Kamchatka Territories (Zhurbenko & Yakovchenko 2014, Zhurbenko et al. 2012b).

*Specimens examined* (all on thalli of *Vulpicida pinastri*) – **2:** 8.viii.2014, M.P. Zhurbenko 14182 (LE 264446); **10:** 16.viii.2014, M.P. Zhurbenko 14183 (LE 264486); **13:** 23.viii.2014, M.P. Zhurbenko 14184 (LE 264436).

#### *Abrothallus stroblii* Hafellner

NOTES – The specimen examined perfectly fits the species protologue except for having slightly smaller ascospores (Figure 3A herein; (6.5–)7.2–8.8(–9.8)  $\times$  (3.0–)3.3–4.1(–4.6)  $\mu$ m, l/b = (1.8–)2.0–2.4(–2.5) (n = 63) in our material vs. 8–9.8–11  $\times$  4–4.6–5  $\mu$ m *fide* Hafellner et al. 2008). So far

the species has previously been reported only from the Austrian Alps where it grew on *Menegazzia terebrata*. It is here is documented as new to Russia and Asia.

*Specimen examined* – **7:** on *Menegazzia terebrata* (moribund parts of thallus), 14.viii.2014, M.P. Zhurbenko 14230 (LE 309428).

***Acremonium antarcticum* (Speg.) D. Hawksw.**

NOTES – Hawksworth (1979) suggested this is not a genuine lichenicolous fungus but rather an opportunist that colonizes damaged lichen thalli. In the examined material the infection caused local reddening while the surrounding parts of host thalli appeared healthy. So far the species has been reported on lichen species of the genera *Caloplaca*, *Hypogymnia*, *Parmelina* and *Xanthoria* (Diederich & Sérusiaux 2000, Eichler et al. 2010, Etayo & Rosato 2008, Kukwa & Flakus 2009, Suija et al. 2009) from the Antarctic and Europe (Luxembourg, Germany, Poland and Estonia). It is newly reported from Asia and Russia.

*Specimen examined* – **14:** on *Rusavskia elegans* (thallus), 28.viii.2014, P.M. Zhurbenko & A. A. Kobzeva 1475a (LE 264455a).

***Arthonia clemens* (Tul.) Th.Fr.**

NOTES – This species has been reported from various lichen genera, including *Aspicilia*, *Caloplaca*, *Lecanora* or *Protopannaria* (Alstrup et al. 2004, Hafellner & Türk 1995, John et al. 2004, Zhurbenko & Santesson 1996), but in a strict sense is probably restricted to species of *Rhizoplaca* (Lawrey & Diederich 2016). It is newly reported from the Caucasus.

*Specimen examined* – **19:** on *Rhizoplaca chrysoleuca* (apothecial discs), 28.viii.2014, P.M. Zhurbenko s.n. (LE 264306b).

***Arthonia coronata* Etayo**

NOTES – In the protologue the ascospores of this species were reported to be somewhat smaller than those of the material cited here ((11.8–)13.4–15.8(–18.1) × (4.7–)5.0–5.6(–5.7) μm, l/b = (2.3–)2.5–3.1(–3.4) (n = 36, in water, I or K) in our material vs. 11–14 × 3.5–5 μm *fide* Etayo 1996). The species was described from France and Spain as growing on soralia of *Flavoparmelia caperata* and subsequently reported from Italy, Germany, Scotland, Sweden, Canada and the U.S.A., also colonizing *Parmeliopsis hyperopta* and various species of *Cladonia* (Coppins & Aptroot 2009, Lendemer & Harris 2012, Svensson & Westberg 2010, van den Boom 2013). It is newly documented for Russia and Asia.

*Specimens examined* (both on soralia of *Flavoparmelia caperata*) – **5:** 12.viii.2014, M.P. Zhurbenko 14319a (LE 309391a); **21:** 6.ix.2014, M.P. Zhurbenko 14205 (LE 309395).

***Arthonia molendoi* (Frauenf.) R. Sant.**

NOTES – This widely distributed species has been reported from a wide range of hosts including *Buellia*, *Cladonia*, *Lepraria*, *Phaeophyscia* or *Rhizoplaca* (Alstrup & Hawksworth 1990, Kondratyuk & Kudratov 2002, Øvstedal & Lewis Smith 2001). In a strict sense it is likely restricted to members of the genera *Caloplaca* and *Xanthoria* as traditionally defined in a broad sense (Lawrey & Diederich 2016). It has been previously reported from the Caucasus from two finds in the Republic of Adygeya and the Karachayevo-Circassian Republic (Urbanavichus & Urbanavichene 2014, Zhurbenko & Kobzeva 2014) and here is newly documented for Krasnodar Territory. The species is further known in Asian Russia only from the Krasnoyarsk Territory and Chukotka Autonomous Area (Zhurbenko 2008, 2009a, b; Zhurbenko & Hafellner 1999).

*Specimens examined* (both on apothecia and thalli of *Rusavskia elegans*) – **10:** 16.viii.2014, M.M. Semichaevskaya s.n. (LE 264275); **15:** 22.viii.2014, M.P. Zhurbenko 14234 (LE 264255).

***Athelia arachnoidea* (Berk.) Jülich**

NOTES – This is a destructive pathogen of many epiphytic lichens (mainly species of Physciaceae), that also colonizes green coccoid algae and mosses, and sometimes grows saprobically on bark or wood (Parmasto 1998, Yurchenko & Golubkov 2003). It was previously known in Asian Russia only from the Sverdlovsk Region (Shiryaev et al. 2010) and the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014). Here the species is newly documented for Republic of Adygeya.

*Specimen examined* – **5:** on *Physconia distorta* (thallus), 15.viii.2014, M.P. Zhurbenko 14300 (LE 309369).

**\**Caloplaca epithallina* Lynge**

NOTES – This is an obligately lichenicolous lichen that grows on a number of distantly related lichen genera, such as *Acarospora*, *Aspicilia*, *Dimelaena*, *Lecanora*, *Montanelia*, *Pleopsidium*, *Psorinia*, *Rhizocarpon*, *Rhizoplaca* (most reports are from this genus), *Stereocaulon* and *Umbilicaria* (Poelt 1985, Rambold & Triebel 1992). So far it has been reported in the Russian Caucasus from the Kabardino-Balkarian and the Karachayevo-Circassian Republics (Blinkova et al. 2004, Poelt 1985). It is newly reported for the Krasnodar Territory and the Republic of Adygeya.

*Specimens examined* – **1**: on *Rhizoplaca melanophthalma* (thallus), 7.viii.2014, P.M. Zhurbenko s.n. (LE 264316); **19**: on *R. chrysoleuca* (thallus), 30.viii.2014, M.P. Zhurbenko 14253 (LE 264435).

**\**Caloplaca grimmiae* (Nyl.) H. Olivier**

NOTES – This is an obligately lichenicolous lichen that specifically grows on species of the genus *Candelariella* (Poelt & Kalb 1985). It was previously known in the Russian Caucasus from the Kabardino-Balkarian Republic (Poelt & Kalb 1985) and is here newly reported for Krasnodar Territory.

*Specimen examined* – **19**: on *Candelariella vitellina* (thallus), 30.viii.2014, M.P. Zhurbenko 14162 (LE 264397).

***Carbonea vitellinaria* (Nyl.) Hertel**

NOTES – In a strict sense this species seems to be a specific parasite of *Candelariella* species (Lawrey & Diederich 2016). However, it has also been reported from species of such genera as *Lecanora*, *Lecidea*, *Rhizocarpon* and *Tephromela* (Knoph et al. 2004, Zhurbenko 2009b). It has been reported in the Russian Caucasus previously from the Karachayevo-Circassian Republic (Blinkova & Urbanavichus 2005, Zhurbenko & Kobzeva 2014) and is here newly documented for the Krasnodar Territory and the Republic of Adygeya. It is further known in Asian Russia from the Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Republic of Buryatia, Republic of Sakha (Yakutia), Kamchatka Territory and Chukotka Autonomous Area (Neshataeva et al. 2006; Urbanavichene & Urbanavichus 2009; Zhurbenko 2008, 2009a, b; Zhurbenko & Hafellner 1999).

*Specimens examined* (all on thalli of *Candelariella vitellina*) – **1**: 5.viii.2014, M.P. Zhurbenko 14157 (LE 264437); 7.viii.2014, M.P. Zhurbenko 14160a & P.M. Zhurbenko (LE 264277a); **19**: 30.viii.2014, M.P. Zhurbenko 14161a (LE 264377a).

***Cercidospora* cf. *macrospora* (Uloth) Hafellner & Nav.-Ros.**

CHARACTERIZATION OF MATERIAL – Ascomata 100–200 µm in diameter. Exciple in its upper part blue green inside, brown outside, colourless to pale brown towards its base. Asci 70–115 × 12–15 µm, (4–)8-spored. Ascospores narrowly clavate with the upper cell often slightly wider and sometimes shorter, occasionally narrowly ellipsoid/fusiform, (17.3–)22.1–28.1(–32.2) × (5.4–)6.1–7.5(–8.6) µm, l/b = (2.4–)3.2–4.2(–4.7) (n = 76), (0–)1-septate, sometimes slightly constricted at the septum, guttulate (Figure 3B). Conidia hyaline, bacilliform, 3.5–4.5 × 1–1.3 µm.

NOTES – So far two species of *Cercidospora* have been reported on *Rhizoplaca melanophthalma*, viz. *C. melanophthalmae* Nav.-Ros., Calat. & Hafellner, a specific parasite of this host species widely distributed in the Holarctic including the Caucasus (Calatayud et al. 2013), and *C. macrospora*, mostly associated with species of *Lecanora saxicola* group and known on *R. melanophthalma* only from a single report from Canada (Alstrup & Cole 1998). Based on Calatayud et al. (2013) *C. melanophthalmae* differs from the material we examined in its much shorter ascospores measuring (16–)18–22(–24) × (4–)5–6.5(–7) µm, and *C. macrospora* differs from our material in having an exciple that is blue-green, sometimes colourless at the base, 4(–8)-spored asci, smaller ascospores, (19–)20–25(–30) × 4–6(–7) µm, with both cells equal in shape and size and showing no preference to the host apothecia. So far *Cercidospora macrospora* has been reported in Russia only from Republic of Karelia (Alstrup et al. 2005).

*Specimens examined* (both on apothecial discs, rarely margins of *Rhizoplaca melanophthalma*) – **1**: 7.viii.2014, M.P. Zhurbenko 14188 (LE 264366); **19**: 30.viii.2014, M.P. Zhurbenko 14189 (LE 264336).

***Cercidospora stenotropae* Nav.-Ros. & Hafellner ad int.**

NOTES – This species was informally introduced by Calatayud et al. (2013) based on collections from Europe, North America and the Antarctic. It has yet to be formally described, but was nonetheless subsequently reported from Asia (Zhurbenko et al. 2015a) and is here reported for the first time from Russia.



*Specimen examined* – **1**: on *Lecanora polytropa* group (apothecia, thallus), 6.viii.2014, *M.P. Zhurbenko 14187* (LE 264376).

***Cladophialophora parmeliae* (Etayo & Diederich) Diederich & Unter.**

NOTES – This lichenicolous hyphomycete was originally placed in the genus *Sclerococcum* but has recently been transferred to *Cladophialophora* based on molecular data (Diederich et al. 2013). It has been reported from scattered finds in Europe, Asia (Japan), North America (U.S.A.) and South America (Columbia, Chile) mainly from various genera of Parmeliaceae, but also from *Pannaria* and *Sticta* (Etayo 2002, Etayo & Diederich 1996, Etayo & Sancho 2008, Kocourkova & Knudsen 2009, Triebel & Scholz 2001, Zhurbenko et al. 2015a). The species is newly documented for Russia.

*Specimen examined* – **16**: on parmelioid lichen (thallus), 2.ix.2014, *M.P. Zhurbenko 14216* (LE 309402).

***Clypeococcum cetrariae* Hafellner**

NOTES – The size of the ascospores in this species apparently vary in different collections, as they were reported to be  $13\text{--}17 \times 4.5\text{--}6 \mu\text{m}$  in the protologue (Hafellner 1994a),  $(12.2\text{--})13.4\text{--}15.0(\text{--}16.2) \times (5.5\text{--})5.8\text{--}7.0(\text{--}8.5) \mu\text{m}$  in Zhurbenko and Zhdanov (2013), and  $(12.0\text{--})14.5\text{--}17.3(\text{--}19.6) \times (4.5\text{--})5.1\text{--}6.3(\text{--}7.7) \mu\text{m}$  in Zhurbenko and Kobzeva (2014). The species was previously known in the Caucasus from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly reported for Krasnodar Territory of Russia. Our material is characterized by infections that produce conspicuous black spots on the host lobes, sometimes with crumbled centers, and by ascospores that are  $(12.5\text{--})14.3\text{--}16.3(\text{--}17.3) \times (4.9\text{--})5.1\text{--}5.9(\text{--}6.9) \mu\text{m}$ , with a length/breadth ratio of  $(2.1\text{--})2.5\text{--}3.1(\text{--}3.3)$  ( $n = 70$ ).

*Specimens examined* – **15**: on *Cetraria islandica* (thallus), 20.viii.2014, *M.P. Zhurbenko 14178a* (LE 264326); **19**: on *Flavocetraria cucullata* (thallus), 30.viii.2014, *M.P. Zhurbenko 14174* (LE 264426).

***Clypeococcum cladonema* (Wedd.) D. Hawksw.**

NOTES – This species grows on *Cetrelia* and *Xanthoparmelia* species and has mainly been known from scattered finds in Europe, but also from Canary Islands, Iran and South Korea (Hafellner 1994a, 1995; Hawksworth 1977b; Joshi et al. 2015; Kocourková 2000; Santesson et al. 2004; Sohrabi & Alstrup 2007). It is here newly documented for Russia and *Flavoparmelia* is a new host genus.

*Specimens examined* (both on thalli of *Flavoparmelia caperata*) – **16**: 26.viii.2014, *M.P. Zhurbenko 14218a* (LE 309416a); **17**: 27.viii.2014, *M.P. Zhurbenko 14326a* (LE 309410a).

***Cornutispora lichenicola* D. Hawksw. & B. Sutton**

NOTES – This species has been reported from many distantly related lichen genera including several finds on *Parmeliopsis* (Kocourková 2000, Kukwa 2005). The species is quite common and widely distributed in both hemispheres (see for instance Brackel 2014), but still newly reported for the Caucasus here.

*Specimen examined* – **12**: on *Parmeliopsis ambigua* (thallus), 24.viii.2014, *M.P. Zhurbenko 14190* (LE 264276).

**\**Diplotomma nivale* (Bagl. & Carestia) Hafellner**

NOTES – According to Lawrey and Diederich (2016) *Diplotomma nivale* is a lichenicolous lichen that grows on members of the genera *Caloplaca* and *Xanthoria* in a broad sense and eventually forms its own independent lichenized thallus. Nordin (1996) included this species within a much broader species concept of *Buellia alboatra* (Hoffm.) Th.Fr., which he treated as a widespread, morphologically highly variable lichen that was not substrate specific and grew on bark, lignum, different kinds of rock and on other lichens. The ascospores in our material are somewhat shorter and narrower than those previously reported ( $(12.5\text{--})14.3\text{--}16.3(\text{--}17.3) \times (4.9\text{--})5.1\text{--}5.9(\text{--}6.9) \mu\text{m}$ ,  $l/b = (2.1\text{--})2.5\text{--}3.1(\text{--}3.3)$  ( $n = 70$ ) in our material vs.  $(13\text{--})14.7\text{--}17.4(\text{--}20) \times (6.6\text{--})7.5\text{--}9.1(\text{--}10) \mu\text{m}$  *fide* Nordin 1996). In the specimens cited below the infections produce conspicuous black spots on the host lobes, sometimes with crumbled centers.

*Specimens examined* (both on thalli of *Rusavskia elegans*) – **1**: 7.viii.2014, *P.M. & M.P. Zhurbenko 14201a* (LE 264295); **12**: 9.viii.2014, *M.P. Zhurbenko 14202* (LE 264405).

***Endococcus incrassatus* Etayo & Breuss**

NOTES – In the material that we examined for this study the ascospores were somewhat larger compared to the size range reported in the protologue  $((10.7\text{--})12.6\text{--}16.2(-18.2) \times (7.0\text{--})7.9\text{--}9.1(-9.8) \mu\text{m}$ ,  $l/b = (1.1\text{--})1.5\text{--}1.9(-2.2)$  ( $n = 57$ , in water or I) in our material vs.  $10.5\text{--}14 \times 6\text{--}8 \mu\text{m}$  *fide* Etayo & Breuss 2001). This rarely reported species is known from a small number of collections made on *Placidiopsis cinerascens* or a sterile squamulose lichen from the U.S.A., Mexico, the Komi Republic and the Stavropol Territory of Russia (Etayo & Breuss 2001, Knudsen & Kocourkova 2008, Zhurbenko & Kobzeva 2014, Zhurbenko et al. 2012a). It is newly reported for the Krasnodar Territory of Russia here.

*Specimen examined* – **14:** on sterile squamulose lichen on soil, 18.viii.2014, *M.P. Zhurbenko* 14167 (LE 264466).

***Heterocephalacria physciacearum* (Diederich) Millanes & Wedin**

NOTES – This is a common lichenicolous heterobasidiomycete with subcosmopolitan distribution that grows on members of Physciaceae (Diederich 1996). It has been reported in the Caucasus from the Republic of Adygeya and the Republic of Daghestan (Urbanavichus & Ismailov 2013, Urbanavichus & Urbanavichene 2014) and is here newly reported for the Krasnodar Territory of Russia. It is further known in Asian Russia from the Sverdlovsk Region and the Magadan Region (Shiryaev et al. 2010, Zhurbenko & Zheludeva 2015).

*Specimen examined* – **18:** on *Physcia stellaris* (thallus), 28.viii.2014, *M.P. Zhurbenko* 14248 (LE 264305).

***Illosporopsis christiansenii* (B. L. Brady & D. Hawksw.) D. Hawksw.**

NOTES – This is a mild pathogen that mainly grows on lichens of the family Physciaceae. It is readily distinguished from the superficially similar *Marchandiomyces corallinus* (Roberge) Diederich & D. Hawksw., which also occurs on members of Physciaceae, in the formation of helicoid conidia (Diederich & Lawrey 2007). Despite being common and widespread the species is so far known in Asian Russia only from a few finds from the Caucasus (Zhurbenko & Kobzeva 2014, Zhurbenko & Otte 2012) and is here newly reported for Krasnodar Territory.

*Specimens examined* – **11:** on *Physcia stellaris* (thallus) and on adjacent bark of *Salix caprea*, 23.viii.2014, *P.M. & M.P. Zhurbenko* 14251 (LE 264485); **13:** on *Physcia stellaris* (thallus), 18.viii.2014, *P.M. Zhurbenko s.n.* (LE 264425); **18:** on *Physcia* sp. (thallus), 27.viii.2014, *M.P. Zhurbenko* 14243b (LE 308474b); on *Physcia stellaris* (thallus), 28.viii.2014, *M.P. Zhurbenko* 14252 (LE 264355).

***Intralichen christiansenii* (D. Hawksw.) D. Hawksw. & M.S. Cole**

NOTES – This common and widespread intrahymenial parasite was described from Greenland where it grew on *Candelariella vitellina* (Hawksworth 1979). Subsequently it was reported from many distantly related lichen genera (see for instance Brackel 2014) including a single report from *Rusavskia elegans* (Alstrup et al. 2000). The species was reported in the Caucasus from the Republic of Daghestan and the Stavropol Territory (Urbanavichus et al. 2010, Zhurbenko & Kobzeva 2014) and is here newly documented for the Krasnodar Territory. It is further known in Asian Russia from the Krasnoyarsk Territory, Republic of Sakha (Yakutia), Chukotka Autonomous Area and Jewish Autonomous Region (Zhurbenko 2009a, 2014; Zhurbenko & Hafellner 1999).

*Specimen examined* – **19:** on *Rusavskia elegans* (apothecia, thallus), 28.viii.2014, *P.M. Zhurbenko & A.A. Kobzeva* 1475b (LE 264455b).

***Intralichen lichenum* (Diederich) D. Hawksw. & M.S. Cole**

NOTES – This species was described from *Opegrapha atra* (Diederich 1990) and later reported from various distantly related genera of lichens including a single report on *Cladonia* (Brackel 2010, 2014) and from the lichenicolous heterobasidiomycete *Tremella ramalinae* (Brackel 2011). Although the species is quite common and widespread it is here newly reported for Russia.

*Specimen examined.* – **3:** on *Cladonia pyxidata* (galls on podetia induced by an unidentified heterobasidiomycete), 9.viii.2014, *M.P. Zhurbenko* 14279c (LE 308610c).

***Lichenochora weillii* (Werner) Hafellner & R. Sant.**

NOTES – This is a widely distributed parasite mainly or possibly exclusively confined to species of *Physconia* (Brackel 2014, Lawrey & Diederich 2016). It has previously been known in the Caucasus from a

single report from the Republic of Adygeya (Urbanavichus & Urbanavichene 2014) and is further known in Asian Russia only from the Krasnoyarsk Territory (Zhurbenko 2009b).

*Specimen examined.* – **1:** on *Physconia muscigena* (thallus), 5.viii.2014, M. P. Zhurbenko 14195a (LE 264256a).

***Lichenosconium aeruginosum* Diederich, M. Brand, van den Boom & Lawrey**

NOTES – This species was reported only from the lichen genus *Cladonia* and is remarkable because of its K+ aeruginose pycnidial wall. It was formerly known from Luxembourg, France, the Netherlands and Turkey (Kocakaya et al. 2016, Lawrey et al. 2011) and is here reported new to Russia. In the specimen cited below the fungus caused discoloration of the host thallus, and the conidia were very close to the size given in the protologue ((3.3–)3.7–4.5(–5.7) × (3.1–)3.3–3.9(–4.3) μm, l/b = (1.0–)1.1–1.3(–1.5) (n = 34) in our material vs. (3.4–)3.8–4.6(–5.4) × (3.0–)3.4–3.8(–4.3) μm *fide* Lawrey et al. 2011).

*Specimen examined.* – **13:** on *Cladonia pyxidata* (podetia), 23.viii.2014, M.P. Zhurbenko 144 (LE 308484).

***Lichenosconium cargillianum* (Linds.) D. Hawksw.**

NOTES – This lichenicolous coelomycete can be recognized by its comparatively large pycnidia (up to 200 μm in diameter) and large, coarsely verrucose conidia measuring 5–7(–7.5) × 3.5–5(–6) μm (Hawksworth 1977a). It is known from scattered finds in Europe, North America (Mexico, U.S.A.), South America (Bolivia, Chile) and New Zealand mainly growing on members of Parmeliaceae (Alstrup & Ahti 2007, Brackel 2011, Cole & Hawksworth 2004, Diederich 2003, Etayo & Diederich 1996, Etayo & Sancho 2008, Flakus & Kukwa 2012, Hafellner & Mayrhofer 2007, Hawksworth 1981). The species is newly reported for Russia here and *Cetrelia* is a new host genus.

*Specimen examined* – **4:** on *Cetrelia cetrarioides* (thallus), 10.viii.2014, M.P. Zhurbenko 14211a (LE 309393).

***Lichenosconium erodens* M.S. Christ. & D. Hawksw.**

NOTES – This is a common and widespread pathogen of many distantly related genera of lichens and lichenicolous fungi, although it appears that this may be the first report from *Cetrelia* (see for instance Brackel 2014). So far it is known in Asian Russia from the Caucasus, Krasnoyarsk Territory, Republic of Sakha (Yakutia), Khabarovsk Territory and Kamchatka Territory (Zhurbenko 2009b, Zhurbenko & Kobzeva 2014, Zhurbenko & Tugi 2013, Zhurbenko & Vershinina 2014, Zhurbenko et al. 2012b).

*Specimens examined.* – **5:** on *Flavoparmelia caperata* (thallus, including soralia), 12.viii.2014, M.P. Zhurbenko 14319b (LE 309391b); **6:** on *Cetrelia olivetorum* (thallus), 14.viii.2014, M.P. Zhurbenko 14196 (LE 264386); **12:** on *Parmeliopsis ambigua* (thallus), 24.viii.2014, M.P. Zhurbenko 14192 (LE 264266).

***Lichenosconium lecanorae* (Jaap) D. Hawksw.**

NOTES – This is a common and widespread pathogen that occurs on a wide range of hosts (see for example Brackel 2014). It is very similar to *Lichenosconium usneae* (Anzi) D. Hawksw., differing mainly in having slightly shorter conidiogenous cells ((4–)5–7(–8) μm in *L. lecanorae* vs. (5–)7–9(–11) μm in *L. usneae* *fide* Hawksworth 1977a). The species is known in Asian Russia from the Caucasus, Krasnoyarsk Territory, Trans-Baikal Territory, Republic of Sakha (Yakutia), Khabarovsk Territory, Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2008, 2009a, b; Zhurbenko & Hafellner 1999; Zhurbenko & Kobzeva 2014; Zhurbenko & Santesson 1996; Zhurbenko & Tugi 2013; Zhurbenko & Yakovchenko 2014; Zhurbenko et al. 2012b) and is newly documented for the Krasnodar Territory here.

*Specimens examined* (all except LE 264297 on apothecial discs of *Rhizoplaca chrysoleuca*). – **3:** 9.viii.2014, M.P. Zhurbenko 14194 (LE 264356); **11:** on *Evernia prunastri* (thallus), 15.viii.2014, M.P. Zhurbenko 14172 (LE 264297); **19:** 28.viii.2014, P.M. Zhurbenko s.n. (LE 264306a); 30.viii.2014, M.P. Zhurbenko 14193 (LE 264296).

***Lichenosconium usneae* (Anzi) D. Hawksw.**

NOTES – This is a pathogenic species that has been reported from many different lichen genera (see for instance Brackel 2014), but only once on *Tuckermannopsis* (Himelbrant et al. 2013). It is known in Asian Russia from the Caucasus, Krasnoyarsk Territory, Trans-Baikal Territory, Republic of Sakha



(Yakutia), Jewish Autonomous Region, Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2009b, 2012, 2014; Zhurbenko & Kobzeva 2014; Zhurbenko & Vershinina 2014; Zhurbenko & Yakovchenko 2014; Zhurbenko et al. 2012b) and is here newly documented for Krasnodar Territory.

*Specimens examined* – **10:** on *Physcia stellaris* (apothecia, thallus), 16.viii.2014, *M.M. Semichaevskaya s.n.* (LE 264395); **13:** on *Tuckermannopsis sepincola* (thallus), 18.viii.2014, *P.M. Zhurbenko s.n.* (LE 264406b); **18:** on *Physcia stellaris* (apothecia, thallus), 28.viii.2014, *M.P. Zhurbenko 14249* (LE 264285).

#### ***Lichenopeltella cladoniarum* E.S. Hansen & Alstrup**

NOTES – This rarely reported cladoniicolous fungus was formerly known from the U.S.A. (Alaska), Denmark (Greenland), Iceland, Sweden, Norway and the Nenets Autonomous Area of Russia (Hansen & Alstrup 1995, Santesson et al. 2004, Spribille et al. 2010, Zhurbenko 2008). It is here newly reported for Asia and for anywhere outside of the arcto-boreal regions.

*Specimens examined* – **19:** on *Cladonia rangiferina* (podetia), 28.viii.2014, *P.M. Zhurbenko s.n.* (LE 308486); on *C. arbuscula* ssp. *arbuscula* (podetia), 30.viii.2014, *M.P. Zhurbenko 142* (LE 308485); on *C. arbuscula* ssp. *mitis* (podetia), 31.viii.2014, *M.P. Zhurbenko 143* (LE 308487).

#### ***Lichenopeltella cetrariicola* (Nyl.) R. Sant.**

NOTES – The species is confined to cetrarioid lichens and is known from Europe, Asia (Irkutsk Region and Buryatiya Republic of Russia), North America (Greenland) and South America (Chile) (Alstrup et al. 2009, Berger 2000, Etayo 2010b, Etayo & Sancho 2008, Hawksworth 1980a, Santesson et al. 2004, Zhurbenko & Vershinina 2014). It is here newly reported for the Caucasus.

*Specimen examined* – **15:** on *Cetraria islandica* (thallus), 20.viii.2014, *M.P. Zhurbenko 14178c* (LE 264497).

#### ***Lichenostigma alpinum* (R.Sant., Alstrup & D.Hawksw.) Ertz & Diederich**

NOTES – The species is most common in the Arctic, where it mainly grows on species of *Ochrolechia* and *Pertusaria*. Nonetheless it is also known from many extra-Arctic regions, for instance from Chile (Tierra del Fuego), the U.S.A. (Georgia) and Bolivia (Diederich 2003, Etayo & Sancho 2008, Flakus & Kukwa 2012). It has been previously reported in Asian Russia from the Caucasus, Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Republic of Buryatia, Republic of Sakha (Yakutia), Jewish Autonomous Region, Kamchatka Territory and Chukotka Autonomous Area (Urbanavichene & Urbanavichus 2009; Zhurbenko 2008, 2009a, b, 2014; Zhurbenko & Hafellner 1999; Zhurbenko & Kobzeva 2014; Zhurbenko & Santesson 1996; Zhurbenko & Zhdanov 2013; Zhurbenko et al. 2012b) and is here newly documented for Krasnodar Territory.

*Specimen examined* – **19:** on *Ochrolechia* cf. *inaequatula* (thallus), 31.viii.2014, *M.P. Zhurbenko 14158* (LE 264317).

#### ***Marchandiomyces corallinus* (Roberge) Diederich & D. Hawksw.**

NOTES – This is a common sclerotial homobasidiomycete that produces pinkish or reddish bulbils (Diederich & Lawrey 2007). It was reported from many different host genera including single find on *Parmeliopsis* (Diederich & Lawrey 2007, Etayo & Diederich 1996). The species is known in Asian Russia from the Caucasus, Republic of Buryatia and Jewish Autonomous Region (Zhurbenko 2008, 2014; Zhurbenko & Kobzeva 2014).

*Specimens examined* – **5:** on *Ramalina* sp. (thallus), 12.viii.2014, *M.P. Zhurbenko 14198* (LE 264365); **10:** on *Vulpicida pinastri* (thallus), 16.viii.2014, *M.P. Zhurbenko 14181* (LE 264456); **12:** on *Parmeliopsis ambigua* (thallus), 24.viii.2014, *M.P. Zhurbenko 14191* (LE 264286).

#### ***Muellerella erratica* (A. Massal.) Hafellner & V. John**

NOTES – This common and widespread species has been reported from many different host genera including a few reports on *Rusavskia elegans* (Triebel 2006, Zhurbenko 2009b). Taxonomic differences of *Muellerella* species growing on *Xanthoria* s.l. require additional study (Zhurbenko 2009b), and our material has ascospores that measure  $(6.0-6.8-8.2(-9.3) \times (2.8-3.4-4.4(-5.4) \mu\text{m}$ , with a length/breadth ratio of  $(1.3-1.7-2.3(-2.7)$  ( $n = 54$ ).

*Specimens examined* (both on apothecia and thalli of *Rusavskia elegans*) – **14:** 18.viii.2014, *M.P. Zhurbenko 14213* (LE 264325); **19:** 30.viii.2014, *M.P. Zhurbenko 14203* (LE 264495).

***Muellerella hospitans* Stizenb.**

NOTES – This species is almost exclusively known from the Northern Hemisphere, where it typically grows on *Bacidia fraxinea* and *B. rubella*, except one report on *Endocarpon* sp. from Peru that might be erroneous (Etayo 2010a). It has been reported in Asian Russia from the Caucasus and Krasnoyarsk Territory (Urbanavichus & Urbanavichene 2015a, Zhurbenko & Kobzeva 2014, Zhurbenko & Santesson 1996).

*Specimen examined* – **20:** on *Bacidia rubella* (apothecia: discs), 10.ix.2014, *M.P. Zhurbenko 14164b* (LE 264327b).

***Muellerella pygmaea* (Körb.) D. Hawksw. var. *pygmaea***

NOTES – This widely distributed and common taxon grows on many different saxicolous lichens including species of *Rhizocarpon* (Hafellner 2000). So far it has been reported in the Russian Caucasus only from the Republic of Daghestan (Urbanavichus et al. 2011) and is here newly documented for the Republic of Adygeya.

*Specimen examined* – **1:** on *Rhizocarpon* sp. (thallus), 7.viii.2014, *P.M. Zhurbenko s.n.* (LE 264396).

***Muellerella ventosicola* (Mudd) D. Hawksw.**

NOTES – This is a widespread parasite on many different saxicolous lichens with numerous records from species of *Ophioparma* and *Rhizocarpon* (Triebel 1989). It has been reported in Asian Russia from the Karachayevo-Circassian Republic, Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Altai Territory, Trans-Baikal Territory, Republic of Sakha (Yakutia) and Chukotka Autonomous Area (Zhurbenko 2008, 2009a, b; Zhurbenko & Davydov 2000; Zhurbenko & Kobzeva 2014; Zhurbenko & Yakovchenko 2014) and is here newly documented for the Republic of Adygeya.

*Specimens examined* – **1:** on *Ophioparma ventosa* (thallus), 5.viii.2014, *M.P. Zhurbenko 14150a* (LE 264387); on *Rhizocarpon* sp. (thallus), 5.viii.2014, *M.P. Zhurbenko 14185* (LE 264416); on *Rhizocarpon* sp. (thallus), 6.viii.2014, *M.P. Zhurbenko 14186* (LE 264346).

***Niesslia cladoniicola* D. Hawksw. & W. Gams**

NOTES – This infrequently reported, but apparently widely distributed, cladoniicolous fungus (see for instance Brackel 2014) was known in Asian Russia only from the Krasnoyarsk Territory (Alstrup 2004, Zhurbenko & Alstrup 2004). It is newly reported here for the Caucasus and from *Cladonia chlorophaea* s.l. and *C. coniocraea*.

*Specimens examined* – **6:** on *Cladonia coniocraea* (moribund basal squamules and podetia), 13.viii.2014, *M.P. Zhurbenko 14289* (LE 308622); **13:** on *C. chlorophaea* s.l. (moribund podetia), 23.viii.2014, *M.P. Zhurbenko 14288* (LE 308621).

***Phaeopyxis punctum* (A. Massal.) Rambold, Triebel & Coppins**

NOTE – This is a common lichenicolous fungus with subcosmopolitan distribution that is confined to species of *Cladonia* (see for instance Brackel 2014). Nonetheless it is newly reported for the Caucasus here.

*Specimen examined* – **12:** on *Cladonia cenotea* (upper surface of basal squamules), 24.viii.2014, *M.P. Zhurbenko 145* (LE 308489).

***Phoma epiphyscia* Vouaux**

NOTES – This lichenicolous coelomycete was neotypified by Alstrup and Hawksworth (1990) on a specimen that grew on *Phaeophyscia sciastra*, but unfortunately those authors did not include a detailed description. It has also been reported on other lichen genera such as *Anaptychia*, *Physcia*, *Physconia* and *Xanthoria* (Brackel 2011, Etayo 2010b, Zhurbenko 2009b, Zhurbenko & Kobzeva 2014). The species was formerly known in the Caucasus only from an uncertain report on *Anaptychia* from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly documented for Krasnodar Territory of Russia. The specimen cited below is characterized by having conidiomata about 125 µm in diameter that protrude in the upper part, conidiogenous cells that are ampulliform and (4.9–)5.1–7.1(–8.4) × (4.2–)4.3–5.3(–5.6) µm (n = 14), and conidia that are oblong to ellipsoid, usually with a small guttule near each end, (4.5–)5.2–6.6(–7.2) × (2.1–)2.2–2.4(–2.5) µm, and have a length/breadth ratio of (1.9–)2.2–2.8(–3.3) (n = 33).



*Specimen examined – 19:* on *Physcia caesia* (thallus), 28.viii.2014, P.M. Zhurbenko s.n. (LE 264335b).

***Phoma physciicola* Keissl.**

NOTES – Following Diederich (2004) conidia of this coelomycete can be somewhat narrower than those of the specimen cited below (oblong, occasionally broadly ellipsoid to subglobose,  $(3.6-4.6-5.8(-6.1) \times (3.0-3.3-3.9(-4.2) \mu\text{m}$ ,  $l/b = (1.0-1.2-1.6(-1.8)$  ( $n = 19$ ) in our material vs.  $4-5.5(-6) \times 2.5-3.5(-4) \mu\text{m}$  *fide* Diederich 2004). It mainly grows on the apothecia of *Physcia* and *Physconia* species (see for instance Brackel 2014), but has also been reported from thalli of *Anaptychia bryorum* (Zhurbenko 2009b). The species was previously reported in Russia from the Republic of Adygeya, Komi Republic, Krasnoyarsk Territory, Khabarovsk Territory and Chukotka Autonomous Area (Urbanavichus & Urbanavichene 2014, Zhurbenko 2009b, Zhurbenko & Tugi 2013, Zhurbenko et al. 2012a) and is here newly documented for Krasnodar Territory.

*Specimen examined – 18:* on *Anaptychia ciliaris* (thallus), 29.viii.2014, M.P. Zhurbenko 14180 (LE 264496).

***Polycoccum pulvinatum* (Eitner) R. Sant.**

NOTES – This is a common and widespread gall-inducing lichenicolous fungus that occurs on species of *Physcia* (see for instance Brackel 2014). It has previously been reported in Asian Russia from the Karachayevo-Circassian Republic, Stavropol Territory, Yamal-Nenets Autonomous Area, Trans-Baikal Territory, Republic of Sakha (Yakutia), Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2009b, Zhurbenko & Kobzeva 2014, Zhurbenko & Yakovchenko 2014, Zhurbenko et al. 2012b) and is here newly reported for Republic of Adygeya.

*Specimen examined – 9:* on *Physcia aipolia* (thallus), 19.ix.2014, A.A. Kobzeva 142 (LE 264375).

***Pyrenidium actinellum* Nyl. s.l.**

NOTES – This species is characterized by the presence of aeruginose colouring in the ostiolar region of its ascomata (Hafellner & Mayrhofer 2007). It was described from *Scytinium teretiusculum* (Hawksworth 1983) and later reported from a wide range of distantly related host genera including *Solorina* (see for instance Etayo 2010a, Hafellner & Mayrhofer 2007, Hawksworth 1980b). Here it is newly reported on *Megaspora*. Navarro-Rosinés and Roux (2007) suggested that *Pyrenidium actinellum* in the broad sense used here constitutes a group of species, but its taxonomy has not yet been revised.

*Specimens examined – 1:* on *Solorina crocea* (thallus), 4.viii.2014, M.P. Zhurbenko 14148b (LE 264367b); on *Megaspora verrucosa* (thallus), 5.viii.2014, M.P. Zhurbenko 14156a (LE 264307).

***Pyrenochaeta cf. xanthoriae* Diederich**

NOTES – Conidiophores up to  $35 \mu\text{m}$  long and  $2.0-2.8 \mu\text{m}$  wide. Conidia  $(3.1-3.9-4.7(-5.3) \times (2.1-2.3-2.7(-2.9) \mu\text{m}$ ,  $l/b = 1.2-1.6-2.0(-2.4)$  ( $n = 52$ ). In the protologue of this species the conidiophores and conidia are smaller than those of the specimen we examined, viz. conidiophores  $4-18 \times 1-1.8 \mu\text{m}$ , conidia  $3-3.5(-4) \times 1.4-1.8(-2) \mu\text{m}$  (Diederich 1990). The species was described and almost exclusively reported from *Xanthoria parietina* (see for instance Brackel 2011, Diederich & Sérusiaux 2000, Etayo 2010b), but not previously from *Rusavskia elegans*. So far it has been reported in Russia (without expressed doubt) only from the Republic of Karelia and the Stavropol Territory (Alstrup et al. 2005, Zhurbenko & Kobzeva 2014).

*Specimen examined – 15:* on *Rusavskia elegans* (thallus), 22.viii.2014, M.P. Zhurbenko 14214 (LE 308476).

***Raesaenenia huuskonenii* (Räsänen) D. Hawksw., Boluda & H. Lindgr.**

NOTES – This species is known from the Northern Hemisphere, being most common in boreal forests, but also occurring in the Arctic (Alstrup et al. 2009, Zhurbenko 2009a) and southwards to the Canary Islands (Hawksworth 1982). It has been reported in Asian Russia from the Caucasus, Krasnoyarsk Territory, Irkutsk Region, Republic of Buryatia, Trans-Baikal Territory, Republic of Sakha (Yakutia) and Kamchatka Territory (Urbanavichene & Urbanavichus 2009, Zhurbenko 2009a, Zhurbenko & Kobzeva 2014, Zhurbenko & Vershinina 2014, Zhurbenko & Yakovchenko 2014, Zhurbenko & Zhdanov 2013, Zhurbenko et al. 2012b).

*Specimens examined* (all on thalli of *Bryoria fuscescens*) – **10**: 16.viii.2014, *M.P. Zhurbenko* 14169 (LE 264477); **18**: 27.viii.2014, *M.P. Zhurbenko* 14168 (LE 264457); 29.viii.2014, *M.P. Zhurbenko* 14170 (LE 264287).

***Roselliniella cladoniae* (Anzi) Matzer & Hafellner**

NOTE – This common cladoniicolous fungus with a subcosmopolitan distribution (see for instance Aptroot et al. 1997, Etayo & Sancho 2008, Matzer & Hafellner 1990, Spribille et al. 2010) is here newly reported for the Caucasus.

*Specimens examined* – **8**: on *Cladonia coniocraea* (basal squamules, occasionally podetia), 13.viii.2014, *A.A. Kobzeva* 1478 (LE 308623); **12**: on *C. pyxidata* (underside of basal squamules), 9.viii.2014, *M.P. Zhurbenko* 14290 (LE 308624).

***Sclerococcum serusiauxii* Boqueras & Diederich**

NOTES – This species was described from Spain and subsequently also reported from Portugal, Italy, France (Corsica), Slovenia and Poland where it was found growing on species of *Parmelina* (Boqueras & Diederich 1993, Brackel 2011, Hafellner 1994b, Kukwa et al. 2013, Suppan et al. 2000, van den Boom & Giralt 1999). It is here newly documented to Russia and Asia.

*Specimens examined* – **18**: on *Parmelina quercina* (apothecia, thallus), 28.viii.2014, *M.P. Zhurbenko* 14330a (LE 309419a); **21**: on *P. tiliaceae* (thallus), 6.ix.2014, *M.P. Zhurbenko* 14220 (LE 309420).

***Sphaerellothecium abditum* Triebel**

NOTES – This species grows strictly within the epinecral layer of thalli of saxicolous crustose lichens, mainly of *Lecidea* s.l., and is known from sporadic finds in Europe, Asia and North America (Triebel 1989, Triebel et al. 1991). It was previously reported from Russia only from the Chukotka Autonomous Area (Karatygin et al. 1999) and is here newly documented for the Caucasus.

*Specimen examined* – **1**: on *Lecidea atrobrunnea* (epinecral layer of areoles), 7.viii.2014, *M.P. Zhurbenko* 14160b & *P.M. Zhurbenko* (LE 264277b).

***Sporidesmiella physconiicola* Zhurb., U.Braun & Kobzeva**

NOTES – This recently described hyphomycete can be recognized by the production of a phialidic synanamorph with densely branched, metula-like heads on the apices of conidiophores (Zhurbenko et al. 2015b). Previously it was known only from two collections on *Physconia distorta* from the Karachayevo-Circassian Republic and Krasnodar Territory in the Caucasus (Zhurbenko et al. 2015b) and is here newly reported for the Republic of Adygeya of Russia.

*Specimen examined* – **11**: on *Physconia distorta* (apothecial discs and margins, thallus), 12.viii.2014, *M.P. Zhurbenko* 14246 (LE 264475).

***Stigmidium frigidum* (Th.Fr. ex Sacc.) Alstrup & D. Hawksw.**

NOTES – This lichenicolous fungus is confined to species of *Thamnolia* and can be confused with *Sphaerellothecium thamnoliae* Zhurb., from which it differs in its usually immersed and inconspicuous vegetative hyphae, aggregated ascomata, constantly 1-septate, non-halonate ascospores and malformations that it induces on the host thalli under heavy infections (Zhurbenko 2012). It has been mostly reported from arctic or alpine habitats in Europe, Asia and North America, but is also known from the Southern Hemisphere (New Zealand and Peru) (Etayo 2010a, Hafellner & Mayrhofer 2007, Hafellner & Türk 1995, Kukwa & Flakus 2009, Santesson et al. 2004, Zhurbenko 2012). The species was previously reported in the Caucasus from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly documented for the Republic of Adygeya and the Krasnodar Territory of Russia.

*Specimens examined* (both on thalli of *Thamnolia vermicularis* var. *subuliformis*) – **1**: 6.viii.2014, *M.P. Zhurbenko* 14151 (LE 264257); **15**: 20.viii.2014, *M.P. Zhurbenko* 14155 (LE 264337).

***Stigmidium hafellneri* Zhurb.**

NOTES – Ascomata about 50–70 µm diam. Interascal gel I–, K/I–. Ascospores on average slightly longer than indicated in the species protologue (Zhurbenko 2009a), viz. (7.2–)8.1–10.1(–11.7) × (2.8–)3.2–4.0(–4.7) µm, l/b = (1.8–)2.2–2.8(–4.0) (n = 89, in water, K or K/I) in our material vs. (7–)7.5–8.5(–11) × (2.5–)3–3.5(–4.5) µm. Infections cause strong bleaching of the host lobes. The species is



remarkable for its permanently coloured mature ascospores, which is an unusual character in the genus (Zhurbenko 2009a). It was previously known from scattered occurrences on *Cetraria islandica* and *Flavocetraria cucullata* in Europe (Estonia) and Asian Russia (Republic of Buryatia, Republic of Sakha (Yakutia) and Magadan Region) (Suija et al. 2015, Zhurbenko 2009a) and is here newly reported for the Caucasus.

*Specimen examined* – **15**: on *Cetraria islandica* (thallus), 20.viii.2014, M.P. Zhurbenko 14178b (LE 264467).

***Stigmidium pumilum* (Lettau) Matzer & Hafellner**

NOTES – This is a common parasite with a subcosmopolitan distribution that grows on members of the Physciaceae (see for instance Brackel 2014). Apart from the Caucasus it has previously been reported in Asian Russia from the Yamal-Nenets Autonomous Area, Krasnoyarsk Territory, Republic of Sakha (Yakutia), Kamchatka Territory and Chukotka Autonomous Area (Zhurbenko 2002, 2009b; Zhurbenko & Kobzeva 2014; Zhurbenko et al. 2012b).

*Specimens examined* – **19**: on *Physcia caesia* (thallus), 28.viii.2014, P.M. Zhurbenko s.n. (LE 264335a); on *P. caesia* (thallus), 28.viii.2014, A.A. Kobzeva 143 (LE 264465); on *P. caesia* (thallus), 30.viii.2014, M.P. Zhurbenko 14271 (LE 264445); on *P. phaea* (thallus), 30.viii.2014, M.P. Zhurbenko 14247 (LE 309368).

***Stigmidium solorinarium* (Vain.) D. Hawksw.**

NOTE – While this species is known from many reports on *Solorina* from Europe, Asia and North America (see for instance Brackel 2014, Hawksworth 1986, Zhurbenko 2009b) it is here newly reported from the Caucasus.

*Specimen examined* – **12**: on *Solorina* sp. (thallus), 9.viii.2014, M.P. Zhurbenko 14146 (LE 264487).

**\**Tetramelas pulverulentus* (Anzi) A. Nordin & Tibell**

NOTES – This endokapylic lichen seems to be most common in the Arctic, where it mainly grows on *Physconia muscigena* (Zhurbenko 2008, 2009b), but is also known from many other regions of Europe, Asia, North America and South America (Nordin 2000). It has previously been reported in the Caucasus from the Karachayevo-Circassian Republic and the Republic of Adygeya (Blinkova et al. 2004, Urbanavichus & Urbanavichene 2014).

*Specimens examined* – **1**: on *Physconia muscigena* (thallus), 5.viii.2014, M.P. Zhurbenko 14195b (LE 264256b); **4**: on *P. distorta* (thallus), 10.viii.2014, M.P. Zhurbenko 14262b (LE 264415b).

***Thamnogalla crombiei* (Mudd) D. Hawksw.**

NOTES – This is a conspicuous gall-inducing lichenicolous fungus that occurs on species of the arcto-alpine genus *Thamnolia* seemingly distributed throughout the subcosmopolitan range of the host (Etayo & Sancho 2008, Flakus & Kukwa 2012, Hafellner & Mayrhofer 2007, Hoffmann & Hafellner 2000, Santesson et al. 2004, Zhurbenko 2012). It was previously known in the Caucasus from the Karachayevo-Circassian Republic (Zhurbenko & Kobzeva 2014) and is here newly reported from Republic of Adygeya.

*Specimens examined* (both on thalli of *Thamnolia vermicularis* var. *subuliformis*) – **1**: 6.viii.2014, M.P. Zhurbenko 14152 (LE 264417); 7.viii.2014, M.P. Zhurbenko 14153 & P.M. Zhurbenko (LE 264447).

***Xenonectriella* cf. *leptaleae* (J. Steiner) Rossman & Lowen**

NOTES – The examined specimens are conspecific with those also reported as *Xenonectriella* cf. *leptaleae* from the Caucasus by Zhurbenko and Otte (2012) and Zhurbenko and Kobzeva (2014), but differ from the species description in Rossman et al. (1999), where it is said that the ascospores are smaller (8–12 × 6.5–8 µm) and the exciple turns yellow in lactic acid. In the specimens cited below the ascomata are subglobose to pyriform, papillate, usually protruding only in ostiolar area, dark red to almost blackish in exposed parts, and 200–300 µm in diameter. The ascomatal walls are orange, not changing color in K or lactic acid. The ascospores are oblong to ellipsoid with rounded ends, occasionally subglobose or obovate, first hyaline and smooth then light to moderate orange and prominently tuberculate, (9.9–)10.8–14.0(–17.9) × (6.5–)7.2–8.4(–9.0) µm in size, with a length/breadth ratio of 1.3–1.9(–2.7) (n = 55), (0–)1-septate, sometimes constricted at the septum, mostly with one large guttule in each cell, and uniseriate in the ascus.

*Specimens examined* – **4:** on *Physconia distorta* (decaying apothecia, thallus), 10.viii.2014, M.P. Zhurbenko 14262c (LE 264415c); on neighbouring *Physcia aipolia* and *Physconia distorta* (bleached thalli), 10.viii.2014, M.P. Zhurbenko 14244 (LE 308472); **11:** on *Physconia distorta* (decaying apothecia, thallus), 12.viii.2014, M.P. Zhurbenko 14245b (LE 264345b); **13:** on *Physcia stellaris* (bleached thallus), 18.viii.2014, P.M. Zhurbenko s.n. (LE 308473).

***Zwackhiomyces berengerianus* (Arnold) Grube & Triebel**

NOTES – This species is known from scattered reports on species of *Bacidia*, *Bilimbia* and *Mycobilimbia* from Europe, Asia and North America (see for instance Grube & Hafellner 1990, Kukwa & Flakus 2009, Zhurbenko 2013, Zhurbenko & Brackel 2013, Zhurbenko & Santesson 1996, Zhurbenko et al. 1995). It is newly reported for the Caucasus here.

*Specimen examined* – **20:** on *Bacidia rubella* (thallus), 10.ix.2014, M.P. Zhurbenko 14164a (LE 264327a).

***Zwackhiomyces coepulonus* (Norman) Grube & R. Sant.**

NOTES – The size of the ascospores of this species published by different authors vary considerably; for instance, according to Grube and Hafellner (1990) they are  $(15-16-20(-21) \times 5.5-8.5(-9) \mu\text{m})$ , and according to Zhurbenko (2009b) they are  $(15-18.5-23(-25) \times (5.5-6-7(-8) \mu\text{m})$ . In our material the ascospores measure  $(15.6-17.2-21.6(-24.0) \times (5.8-6.8-8.0(-8.2) \mu\text{m})$  and have a length/breadth ratio of  $(2.1-2.3-2.9(-3.3)$  ( $n = 26$ ). The species is known from the Northern Hemisphere from members of the genera *Caloplaca* and *Xanthoria* in a broad sense (see for instance Brackel 2014). It was formerly known in Russia from the Republic of Adygeya, Nenets Autonomous Area and Krasnoyarsk Territory (Urbanavichus & Urbanavichene 2014, Zhurbenko 2009b).

*Specimen examined* – **12:** on *Rusavskia elegans* (thallus), 5.viii.2014, A.A. Kobzeva (LE 264315).

***Zwackhiomyces echinulatus* Brackel**

NOTES – This species was recently described from Sicily where it grew on *Physconia distorta* (Brackel 2008). Later it was found in Russia in the Tula Region, Tver Region and Karachayevo-Circassian Republic (Zhurbenko & Gudovicheva 2013, Zhurbenko & Kobzeva 2014, Zhurbenko & Notov 2015) and is here newly reported for the Republic of Adygeya.

*Specimen examined* – **11:** on *Physconia distorta* (partly damaged apothecia and thallus), 12.viii.2014, M.P. Zhurbenko 14250 (LE 264265).

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# Lichens, lichenicolous fungi, and allied fungi of Pipestone National Monument, Minnesota, U.S.A., revisited

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**ABSTRACT.** – A total of 154 lichens, four lichenicolous fungi, and one allied fungus were collected by the authors from 2004 to 2015 from Pipestone National Monument (PNM), in Pipestone County, on the Prairie Coteau of southwestern Minnesota. Twelve additional species collected by previous researchers, but not found by the authors, bring the total number of taxa known for PNM to 171. This represents a substantial increase over previous reports for PNM, likely due to increased intensity of field work, and also to the marked expansion of corticolous and anthropogenic substrates since the site was first surveyed in 1899. Reexamination of 116 vouchers deposited in MIN and the PNM herbarium led to the exclusion of 48 species previously reported from the site. Crustose lichens are the most common growth form, comprising 65% of the lichen diversity. Sioux Quartzite provided substrate for 43% of the lichen taxa collected. Saxicolous lichen communities were characterized by sampling four transects on cliff faces and low outcrops. An annotated checklist of the lichens of the site is provided, as well as a list of excluded taxa. We report 24 species (including 22 lichens and two lichenicolous fungi) new for Minnesota: *Acarospora boulderensis*, *A. contigua*, *A. erythrophora*, *A. strigata*, *Agonimia opuntiella*, *Arthonia clemens*, *A. muscigena*, *Aspicilia americana*, *Bacidina delicata*, *Buellia tyrolensis*, *Caloplaca flavocitrina*, *C. lobulata*, *C. soralifera*, *Candelariella antennaria*, *Dermatocarpon arenosaxi*, *Diplotomma subdispersa*, *Endocarpon pallidulum*, *Enterographa osagensis*, *Pseudosagedia chlorotica*, *Psoroglaena dictyospora*, *Punctelia missouriensis*, *Verrucaria calkinsiana*, *V. furfuracea*, and *V. sphaerospora*. In addition, we report *Acarospora erythrophora* new for Kansas and Oklahoma, *Enterographa osagensis* new for Nebraska and South Dakota, and *Pseudosagedia chlorotica* new for Oklahoma.

**KEYWORDS.** – Great Plains, floristic change, lichen community structure, Northern Glaciated Plains Ecoregion.

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## INTRODUCTION

Pipestone National Monument (PNM) encompasses 122 hectares (301 acres) in the Northern Glaciated Plains Ecoregion (Omernik & Griffith 2008), on the Prairie Coteau of southwestern Minnesota. Designated a national monument in 1937, PNM is located in Pipestone County, at the northwest edge of the town of Pipestone (44.041°N, 96.325°W; figure 1). Between 1975–2015, annual temperatures at PNM averaged 6.5°C (43.7°F), with mean monthly temperatures ranging from –11.1°C (12.1°F) in January to 21.8°C (71.3°F) in July. Average annual precipitation was 67.8 cm (26.7 inches), with most precipitation occurring between April and September (NOAA 2016). Between 1956–1970, average annual growing season open pan evaporation in the region was approximately 106.7 cm (42.0 inches) (Farnsworth et al. 1982), resulting in a negative net evaporation value (open pan evaporation minus annual precipitation) of approximately 38.9 cm (15.3 inches) and a precipitation to evaporation ratio of 0.63, within the 0.3–1.0 range typically attributed to temperate grasslands (Transeau 1905).

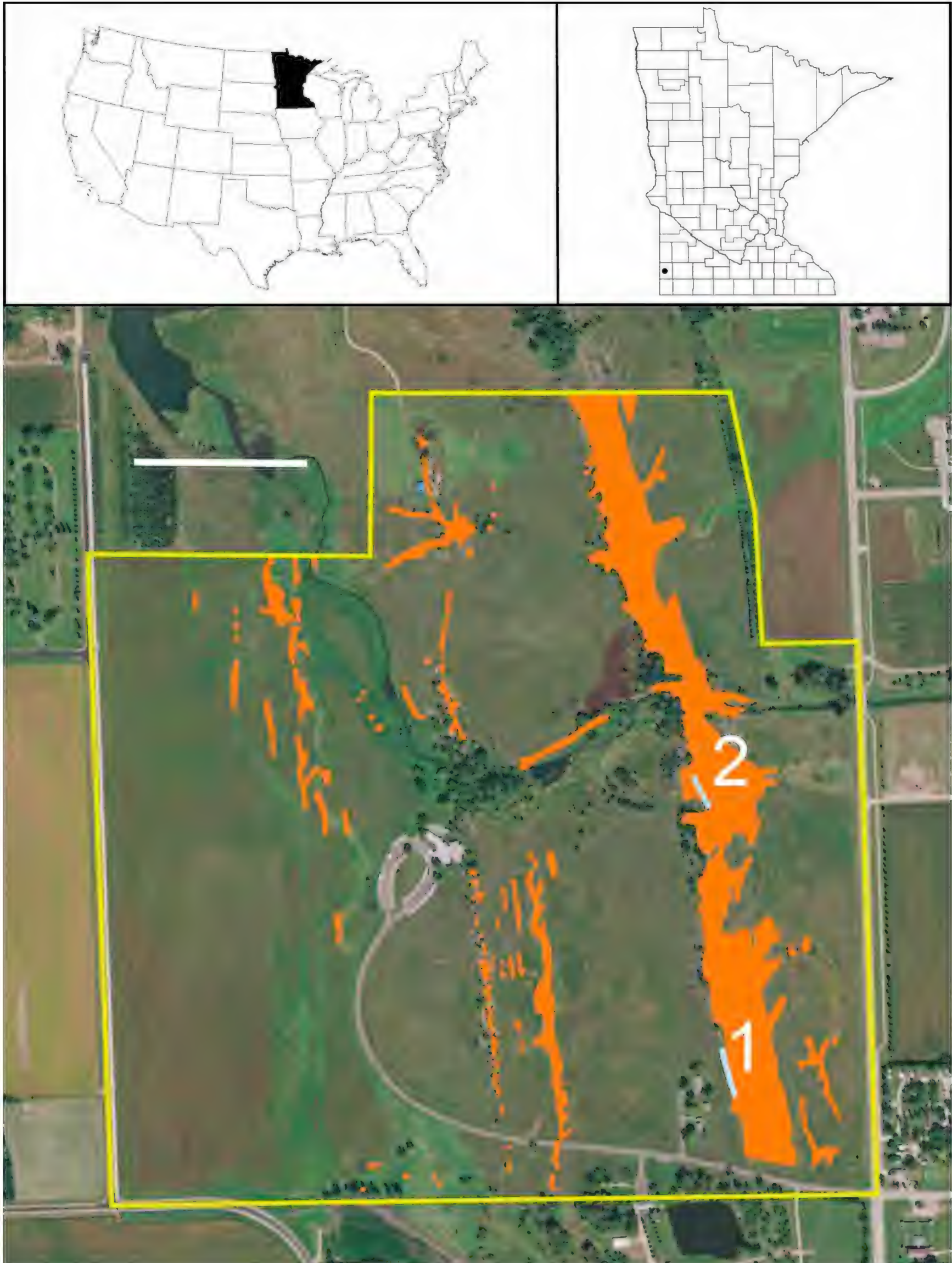
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**Figure 1.** Location of Pipestone National Monument, Pipestone Co., Minnesota (top right and left). Map of the the study area (bottom) with Sioux Quartzite outcrops indicated in orange, and sampling transects indicated in blue (1, Flats transect, 2, Upper Cliff, Mid-Cliff, and Lower Cliff transects; scale = 250 m).

The site is geologically and historically significant for its numerous high-quality pipestone (catlinite) quarries, which were developed and continuously worked by Native Americans from about 1200 CE (Corbett 1980) to the present day. Catlinite is a red metamorphic claystone that can be hand-carved into ceremonial pipes. This soft claystone is sandwiched between thicker layers of Precambrian Sioux Quartzite bedrock (Southwick et al. 1986). In addition to the subsurface quarries, three parallel north–south ridges of Sioux Quartzite form flat, low outcrops and a low line of cliffs at PNM (figure 2). The sheer red cliffs have a western exposure and rise up to five meters. A massive, abandoned sandstone railroad trestle stands over an ephemeral wetland toward the eastern boundary of the monument.

Historically, the vegetation of PNM would have been dominated by tallgrass prairie, with rare woody vegetation restricted to sheltered sites and stream courses. During his 1835 expedition to the site, the painter George Catlin noted of the surrounding prairie that for “...a distance of forty or fifty miles, there was not a tree or a bush to be seen in any direction...” (Catlin 1839, p. 140), although his painting of the pipestone quarries shows a few shrubs or small trees (Catlin 1836–1837). When Bruce Fink visited the site in 1899, he observed that “...the few young trees found, though large enough to bear the foliaceous lichens which commonly migrate to rocks... scarcely bear a lichen of any kind...” (Fink 1902, p. 284). Over the past 115 years there has been a significant increase of trees and shrubs at PNM, probably due primarily to fire suppression and altered grazing and browsing regimes (Samson et al. 2004, Fuhlendorf et al. 2008, van Auken 2009). Deciduous trees and scattered shrub thickets have grown up along Pipestone Creek and the quartzite ridges. Today, vegetation at PNM includes remnant and replanted tallgrass prairie, bur oak (*Quercus macrocarpa*) woodland along the ridges, a narrow riparian woodland of boxelder (*Acer negundo*), common hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), and plains cottonwood (*Populus deltoides* subsp. *monilifera*) along the perennial Pipestone Creek, and Sioux Quartzite prairie—which develops over thin, seasonally saturated soils over quartzite bedrock (MDNR 2003). Scattered thickets of redosier dogwood (*Cornus sericea* subsp. *sericea*), Tatarian honeysuckle (*Lonicera tatarica*), and American plum (*Prunus americana*) are found in areas protected from fire. Tree ring analysis suggests that many of the bur oaks date to ca. 1880–1885 (Landers 1979) and as we document these trees now provide ample habitat for a rich corticolous lichen community.

The land comprising PNM has a long history of lichenological study, beginning with the work of Bruce Fink, who gathered 5,500 specimens in Minnesota between 1896 and 1902 for his Ph.D. dissertation and as part of the Botanical Survey of Minnesota (Wetmore 1978). During the summer of 1899, he collected approximately 30 numbers at or near the site that is now PNM, and published the results in a preliminary report (Fink 1902). The site was resurveyed by Timothy Vinyard, who reportedly collected some 350 specimens during the field seasons of 1983–1984 in support of an update of the flora of PNM (Willson & Vinyard 1986). Finally, Gerald Wheeler collected 23 lichens from PNM on May 13, 1999. In light of the substantial floristic and management changes that PNM has undergone since Fink first visited the site, and as part of a larger effort to document the lichen flora of the Great Plains, we re-inventoried the lichens of PNM and report our results here.

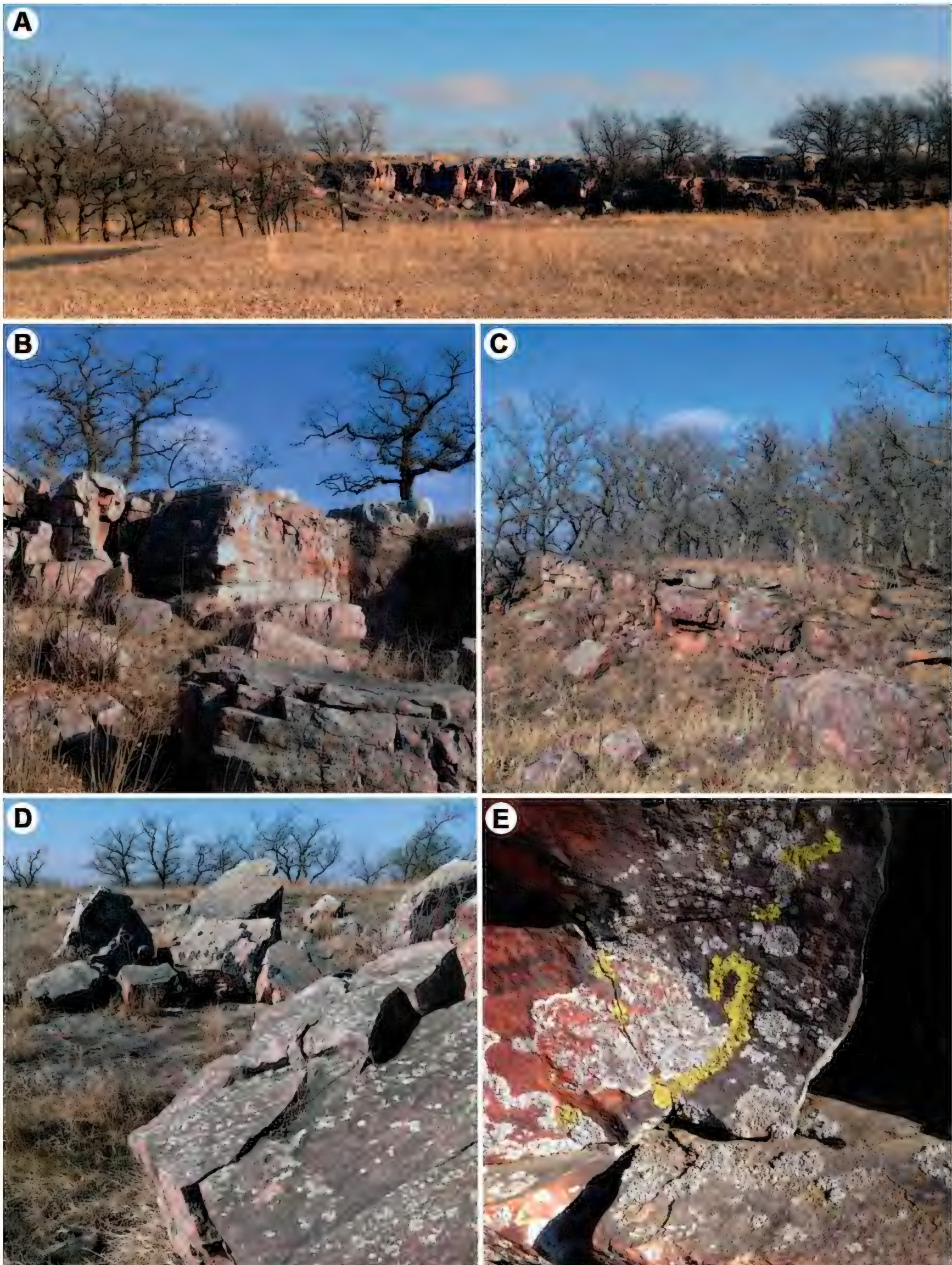
## MATERIALS AND METHODS

Field work for this project consisted of 28 field days between 2004 and 2015. Efforts were made to survey all habitats and substrates on the site. In all, 368 collections were obtained, principally by MKA; these have been deposited in the R.L. McGregor Herbarium at the University of Kansas (KANU). In addition, we reviewed 65 specimens deposited by Vinyard in the herbarium of PNM (hereafter, hb. PNM). We assume that the Vinyard specimens were deposited in hb. PNM as a synoptic collection representing the diversity of the 65 species reported in Willson and Vinyard (1986). The remaining 285 specimens collected by Vinyard in preparation for those authors’ report could not be located and are assumed to have been lost. Finally, we reviewed 51 specimens from MIN, representing the bulk of Fink’s collections from Pipestone, and a handful of specimens gathered by Wheeler and other collectors.

Specimens were studied using dissecting and compound microscopes, and subjected to chemical analysis using standard spot tests (Brodo et al. 2001). Where it was required for positive identification, Thin Layer Chromatography (TLC) was conducted at KANU using solvent systems A and C following the methods of Orange et al. (2001).

To assess patterns of saxicolous lichen inhabitancy at the site, and to develop a baseline for future monitoring and assessment, two transects were established on Sioux Quartzite exposures at PNM (figure 1):





**Figure 2.** Rock formations and bur oak woods of Pipestone National Monument. A, west-facing Sioux Quartzite cliffs, with bur oak woods in the foreground; B, wooded cliff and float rock below cliff; C, wooded cliff with abundant bur oak; D, boulders below cliffs; E, saxicolous lichen community including *Acarospora contigua*, *Dimelaena oreina*, and *Physcia subtilis*. (Photographs by Nickolee Larson.)



State/Province, Country	Unit name	Area	Taxa included	No. taxa	Reference
Minnesota, USA	Pipestone National Monument	122 ha	lichens and allied fungi	171	this study
North Dakota, USA	native pine woodlands	1,821 ha	lichens	172	Hertz (2001)
North Dakota, USA	Theodore Roosevelt National Park	30,700 ha	lichens	204	Wetmore (1985)
Saskatchewan, Canada	Grasslands National Park	57,100 ha	lichens and lichenicolous fungi	217	Freebury (2014)
South Dakota, USA	Badlands National Park	98,600 ha	lichens and lichenicolous fungi	171	Will-Wolf (1998)

**Table 1.** Comparison of the lichen flora of Pipestone National Monument with lichen floras of several other geographic units in the Great Plains.

Transect 1 (“Flats transect”) runs along a line of exposed low flat outcrops south-southeast of the visitor center; Transect 2 (“Cliff transect”) runs along the base of the west-facing cliffs south of the small waterfall. Flags were placed at 5 meter intervals along each transect. A square 0.5 × 0.5 meter flat wooden quadrat was used, giving a sampling area of 0.25 square meters for each quadrat; each side of the square frame was marked off in 1 centimeter increments to aid in estimating lichen coverage within the quadrat (Peck et al. 2004). For the Flats transect, the quadrat was placed on the ground and centered over each marker flag, with a total of 10 quadrats sampled. For the Cliff transect, the quadrat was placed vertically upon the cliff face. At each marker-flag along the cliff transect, three quadrats were sampled: one at the cliff base with the lower edge of the frame set upon the ground (Lower Cliff); one with the frame centered at 1.5 meters height (Mid-Cliff); and one with the frame centered at 3 meters height (Upper Cliff). A total of 30 quadrats were sampled from the Cliff transect (10 from each level). All saxicolous and terricolous lichens present in each quadrat were recorded and assigned a cover-abundance value ranging from 1 to 5 according to the following protocol: 1 = less than 1% cover; 2 = 1 to <5% cover, or <1% cover but present in all 4 quadrants of the quadrat; 3 = 5 to <25% cover; 4 = 25-50% cover; 5 = >50% cover (Peck et al. 2004). Each lichen species was also given a frequency score for each quadrat (1 if present, 0 if absent), which when summed and averaged gives the mean number of species per quadrat.

Two of the authors (DL and MKA) together analyzed and reached consensus on all quadrats except those of the Upper Cliff samples, which were too high for MKA on the available ladder. Small specimens of questionable taxa were removed and determined later in the lab using standard techniques described above. Frequency (presence or absence of a species in each quadrat) and cover-abundance data from each of the four sampling data sets (Flats, Lower Cliff, Mid-Cliff, and Upper Cliff transects) were used to develop Relative Importance Values (RIV<sup>200</sup>) (Bray & Curtis 1957) for lichens in each data set. RIV<sup>200</sup> was calculated as: (% relative frequency + % relative coverage)/2. Sørensen’s Index of Similarity (Mueller-Dombois & Ellenberg 1974) was used to compare the degree of similarity of lichen composition among the transects. Sørensen’s indices were calculated as:  $2c/(a+b)$  where  $c$  is the number of species shared by both samples,  $a$  is the number of species present in one sample, and  $b$  is the number of species present in the other sample. The higher the index, the more similar are the two samples, with 1.0 representing perfect correlation and 0.0 indicating no shared species at all.

## RESULTS AND DISCUSSION

*Diversity.* — Our field work documented a total of 154 species of lichens, four lichenicolous fungi, and one allied fungus for PNM. Review of historical collections revealed twelve species not collected by us, for a total of 171 taxa. Published studies of the lichens of the northern Great Plains are limited. However, considering the small size of the study area (122 ha), the PNM flora compares well with other reports for the region (Table 1). On each of our 28 visits to PNM we came across additional lichen species, suggesting there are still more to be found.

Included in this paper are the first published reports for Minnesota for 24 species, including 22 lichens and two lichenicolous fungi—a surprisingly large number given the long history of lichenological work in the state (e.g., Fink 1910; Bennett & Wetmore 2005a; Wetmore 1978, 2005; and references



therein). New to Minnesota from PNM are *Acarospora boulderensis*, *A. contigua*, *A. strigata*, *Agonimia opuntiella*, *Arthonia clemens*, *A. muscigena*, *Aspicilia americana*, *Bacidina delicata*, *Buellia tyrolensis*, *Caloplaca flavocitrina*, *C. lobulata*, *C. soralifera*, *Candelariella antennaria*, *Dermatocarpon arenosaxi*, *Diplotomma subdispersa*, *Endocarpon pallidulum*, *Enterographa osagensis*, *Pseudosagedia chlorotica*, *Psoroglaena dictyospora*, *Punctelia missouriensis*, *Verrucaria calkinsiana*, *V. furfuracea*, and *V. sphaerospora*. *Acarospora erythrophora* is also here reported new for Minnesota, based on a specimen collected just outside PNM in the Hiawatha Game Refuge. We also report new state records of *Acarospora erythrophora* for Kansas and Oklahoma, *Enterographa osagensis* for Nebraska and South Dakota, and *Pseudosagedia chlorotica* for Oklahoma.

In their summary of lichens in United States National Parks, Bennett and Wetmore (2005a) included 75 species of lichens reported from PNM based on five uncited reports. However, other than papers by Fink (1902) and Willson and Vinyard (1986), we know of no published reports for PNM lichens, except perhaps for a brief mention in three similar summary reports for United States National Parks (Bennett & Wetmore 1992, 2005b, 2005c). Redetermination of collections by Fink, Vinyard, Wheeler, and one specimen each collected by M. Manzel and J.P. Schuster, allowed us to adjust synonymies and to correct erroneous determinations, thereby excluding 48 species previously reported from PNM by Fink (1902) or Willson and Vinyard (1986), although three of these species were returned to the list when found later at PNM by the authors.

The following discussion and annotated list includes mention of records included in the Consortium of North American Lichen Herbaria database (CNALH 2016). While we are generally skeptical of using unverified online specimen data, most of the citations supporting species distributions in the Great Plains are based on our own collections deposited in KANU. Citations of other specimens posted to CNALH (2016) that the authors did not examine are clearly indicated as such below.

*Physiognomy.* — The majority of lichens at PNM were crustose, comprising 65% of the 154 species collected. Some 27% of the lichens at the site were foliose, 6% were fruticose, and 2% were squamulose. Crustose lichens were particularly dominant on lignum (72%). Foliose lichens were better represented on bark (39% of taxa), although crustose lichens still comprised the majority (59%).

*Substrates and Frequency.* — Primary substrates available to lichens at PNM included Sioux Quartzite, deciduous hardwood trees and shrubs, soil, wooden fences, decorticate stumps, bryophytes, other lichens, and various calcareous, anthropogenic substrates such as concrete, gravel, and a sandstone trestle. The majority of the lichens (55%) at PNM were saxicolous. Substrate affinities for the 154 taxa that we collected were as follows (several lichens were found on two or more substrates, thus the values add up to more than 154 and percentages to greater than 100%): 66 (43%) saxicolous on Sioux Quartzite, 45 (29%) corticolous, 18 (12%) saxicolous, only found on anthropogenic calcareous substrates, 18 (12%) lignicolous, 14 (9%) terricolous, 5 (3%) on detritus or dead *Selaginella* stems, and 1 (0.6%) muscicolous.

The Sioux Quartzite formation consists of four major rock types with a range in granule size from fairly coarse conglomerates to very fine red claystone (Southwick et al. 1986). The claystone (pipestone) is still actively quarried and so is generally not available as a lichen substrate. Most of the surfacing outcrops at PNM are of the hard red orthoquartzite that is so smooth as to appear polished. Crustose lichens predominated on this substrate. A much coarser-grained quartzite is quarried below ground level in the search for the red claystone. Discarded into aging heaps beside the quarries, tailings of this quartzite provide an ideal substrate for many of the foliose lichens that would otherwise be much less common at PNM, including *Phaeophyscia adiastrum*, *Physcia caesia*, *P. dubia*, and *Xanthoria elegans*. The fourth rock type of the Sioux Quartzite formation is a coarse gravel-formed conglomerate which is not present at PNM (Graham 2009).

A few lichens (e.g., *Dermatocarpon arenosaxi* and *Phaeophyscia sciastra*) were found primarily on the large, flat, ground-level outcrops of Sioux Quartzite, which are subject to significant extremes of temperature and moisture, ranging from hot, sunny, dry conditions to periodic pooling of rainwater to winter snow-cover. These lichens are not known to occur on the irregularly shaped boulders of granitic glacial erratics present throughout much of the Glaciated Plains (see, EPA 2011) of North and South Dakota and southwestern Minnesota (MKA unpublished data). A handful of species were unique to the sheer vertical faces of Sioux Quartzite cliffs where a cooler, shadier, more humid microclimate was present near the cliff base, somewhat protected from direct wetting; *Caloplaca flavocitrina* and *Lepraria finkii* were found in this niche at PNM.

<b>Taxon/transect</b>	<b>Flats</b>	<b>Upper Cliff</b>	<b>Mid-Cliff</b>	<b>Lower Cliff</b>
<i>Acarospora americana</i>	5.15	4.96	6.07	0.97
<i>Acarospora contigua</i>	1.25	3.67	0.95	0.97
<i>Aspicilia</i> spp.*	7.64	6.79	6.46	0.97
<i>Buellia aethalea</i>	0.53	—	—	—
<i>Buellia tyrolensis</i>	1.06	—	—	—
<i>Caloplaca chlorina</i>	0.53	—	0.95	3.06
<i>Caloplaca flavocitrina</i>	—	—	3.23	3.43
<i>Caloplaca holocarpa</i>	1.06	—	2.84	4.63
<b><i>Caloplaca sideritis</i></b>	2.84	1.83	3.23	0.97
<i>Caloplaca subsoluta</i>	2.11	—	—	—
<b><i>Candelaria concolor</i></b>	4.22	6.41	6.62	7.18
<i>Candelariella vitellina</i>	6.26	0.92	0.95	—
<i>Cladonia pyxidata</i>	2.17	—	—	—
<i>Dermatocarpon arenosaxi</i>	1.78	1.83	1.34	—
<i>Dimelaena oreina</i>	9.22	12.95	4.73	—
<i>Hyperphyscia</i> sp.	—	0.92	—	0.97
<i>Lecanora dispersa</i>	—	0.92	1.34	2.92
<i>Lecanora muralis</i>	5.4	—	—	—
<i>Lepraria finkii</i>	—	—	3.62	3.29
Lichinaceae genus 1	1.78	—	—	—
Lichinaceae genus 2	0.92	—	—	—
<i>Peltula euploca</i>	—	—	0.95	0.97
<b><i>Phaeophyscia adiastrata</i></b>	0.53	1.83	3.23	11.49
<i>Phaeophyscia hirsuta</i>	—	—	0.95	0.97
<i>Physcia caesia</i>	—	0.92	—	0.97
<b><i>Physcia dakotensis</i></b>	3.56	8.85	4.57	1.71
<i>Physcia dubia</i>	3.29	—	—	—
<b><i>Physcia halei</i></b>	5.54	5.34	7.96	6.21
<b><i>Physcia subtilis</i></b>	6.98	14.31	15.55	14.31
<i>Physciella chloantha</i>	—	1.83	0.95	4.26
<i>Physciella melanchra</i>	0.53	4.58	—	0.97
<i>Rhizocarpon disporum</i>	6.52	2.75	1.89	—
<i>Rhizoplaca chrysoleuca</i>	2.90	—	—	—
<b><i>Rinodina siouxiana</i></b>	2.31	7.55	6.85	7.32
<i>Staurothele areolata</i>	2.7	—	—	—
<b><i>Verrucaria sphaerospora</i></b>	3.36	0.92	3.23	2.32
<b><i>Xanthomendoza fallax</i></b>	2.11	9.01	9.69	8.66
<i>Xanthomendoza ulophyllodes</i>	—	—	—	0.97
<b><i>Xanthomendoza weberi</i></b>	1.06	0.92	0.95	7.55
<i>Xanthoparmelia mexicana</i>	4.68	—	—	—
<i>Xanthoparmelia viriduloumbrina</i>	—	—	0.95	—
unknown areoles	—	—	—	0.97
unknown green crust	—	—	—	0.97
<b>taxa/transect</b>	31	22	26	27
<b>mean taxa/quadrat</b>	15.5	9.3	9.3	8.5



Dominant lichens on horizontal Sioux Quartzite outcrops included *Dimelaena oreina*, *Physcia dakotensis*, and *P. subtilis*; also common were *Aspicilia americana*, *A. cinerea*, *Rhizocarpon disporum*, *Xanthoparmelia mexicana*, and, in wetter areas, *Staurothele areolata*. Species that favored large quartzite boulders with sloping faces include *Buellia badia*, *B. tyrolensis*, *Candelariella vitellina*, *Rhizoplaca chrysoleuca*, and *Verrucaria sphaerospora*. Lichens that grew mostly on basal, humid, and/or shaded portions of quartzite fragments included *Caloplaca chlorina*, *C. sideritis*, and *C. subsoluta*. Three typically corticolous taxa, near the western limit of their Great Plains range (Brodo et al. 2001; CNALH 2016), were found only on Sioux Quartzite at PNM: *Physconia leucoleiptes*, *Punctelia rudecta*, and *Xanthomendoza ulophyllodes*. Many lichens that are typically corticolous were also found to be abundant on quartzite fragments under trees; these include *Candelaria concolor*, *Physciella melanchra*, *Xanthomendoza fallax*, and *X. weberi*.

Based on the first author's collecting experience at twelve other Sioux Quartzite outcrops in Iowa, Minnesota, and South Dakota, the lichen flora on quartzite at PNM appears to be particularly diverse (MKA unpublished data). Compared with these other sites, PNM has a greater variety of rock forms (cliffs, flats, and boulders), exposed and shaded outcrops, smooth and coarse rocks, and abundant tailings, all of which might support a more diverse population of lichens.

Calcareous substrates at PNM are virtually all anthropogenic, and include concrete, imported calcareous gravel, and the ruins of a train trestle constructed ca. 1884 of imported sandstone of unknown provenance (Rose 1911). Twenty-two taxa were found on these substrates, including two undetermined species of *Verrucaria* on the sandstone. A thin calcareous deposit over the surface of a single Sioux Quartzite boulder provided the only natural calcareous substrate, from which the sole collection of *Sarcogyne regularis* was obtained. Saxicolous taxa that grow on calcareous substrates at PNM include *Acarospora strigata*, *Caloplaca feracissima*, *C. pratensis*, *C. soralifera*, *Candelariella aurella*, *Circinaria contorta*, *Endocarpon pallidulum*, *E. petrolepideum*, *Lecanora dispersa*, *Phaeophyscia nigricans*, *Rinodina castanomelodes*, *Sarcogyne regularis*, *Staurothele drummondii*, *Verrucaria calkinsiana*, *V. furfuracea*, and *V. nigrescens*.

Corticolous lichens comprised 29% of the Pipestone taxa, and are typical of the diversity and abundance of such lichens in the Prairie Coteau region of the northern Great Plains (CNALH 2016). *Physciella melanchra* and *Xanthomendoza fallax* were the dominant lichens on hardwood boles; also abundant were *Hyperphyscia confusa*, *Physciella chloantha*, and *Xanthomendoza weberi*. *Caloplaca ulcerosa* was occasional at the bases of hardwood boles. *Physcia stellaris* was the dominant lichen on exposed branches of trees and shrubs; less frequent on such branches were *Amandinea dakotensis*, *Arthonia muscigena*, *Arthrosporum populorum*, *Rinodina populicola*, *R. pyrina*, *Teloschistes chrysophthalmus*, and *Xanthomendoza hasseana*.

Most of the lignicolous lichens at the monument occurred on wooden fences; *Caloplaca microphyllina* was the most abundant. In more heavily forested areas east of the Great Plains there are a number of corticolous lichens which in the Great Plains often grow on wooden fence posts and rails instead of bark; just such a change of substrate was demonstrated at PNM by *Flavopunctelia flaventior*, *Parmelia sulcata*, and *Ramalina culbersoniorum*. Similarly, taxa that are usually saxicolous will occasionally inhabit wooden fences in the Great Plains; examples at PNM included *Caloplaca subsoluta*, *Candelariella aurella*, and *Candelariella vitellina*.

In pastures and prairies throughout the northern Great Plains, three of the most common terricolous lichens are *Endocarpon pallidulum*, *Diploschistes muscorum*, and *Placidium squamulosum* (CNALH 2016); all three taxa are present at PNM. A fourth terricolous lichen common in the Great Plains, *Bacidia bagliettoana*, was collected at PNM by Fink. Although not found by the authors at PNM, we have collected it elsewhere in Pipestone County.

The most abundant lichens associated with the thin layer of soil that often accumulates over the flat, low quartzite outcrops were *Cladonia magyarica*, *C. pyxidata*, and *Dermatocarpon arenosaxi*, the last

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**Table 2 (Page 62).** Saxicolous lichen community composition on Sioux Quartzite at Pipestone National Monument, based on transect sampling data. Figures in columns are relative importance values based on frequency and cover-abundance data (RIV<sup>200</sup>). Taxa present in all four transects are in bold-face type. A dash (—) indicates that a species was not observed in a given transect. *Note* (\*): *Aspicilia americana* and *A. cinerea* are found at PNM but since they cannot be distinguished from each other with confidence in the field, they are here represented as *Aspicilia* spp.

	Flats	Upper Cliff	Mid-Cliff
Lower Cliff	0.55	0.73	0.79
Mid-Cliff	0.67	0.75	
Upper Cliff	0.68		

**Table 3.** Sørensen's Index of Similarity among four saxicolous lichen sampling transects at Pipestone National Monument.

growing both on soil and directly on quartzite. The vascular cryptogam northern selaginella (*Selaginella rupestris*) shares this same niche and the dead stems and leaves of this species provided substrate for *Amandinea polyspora* and *Caloplaca thuringiaca*.

*Biogeographic Affinities.* — Pipestone National Monument lies along a transition between the grasslands of the Great Plains to the west and the woodland biomes to the north and east. As woodlands transition to grasslands through the increasingly arid western plains, many corticolous lichens reach their range limits. Five species reach the western edge of their distributional ranges for eastern North America here: *Alyxoria varia*, *Flavoparmelia baltimorensis*, *Parmotrema reticulatum*, *Punctelia rudecta* (Brodo et al. 2001), and *Xanthomendoza weberi* (Lindblom 1997, 2005). In the Great Plains to the west of PNM these species are either absent or restricted to isolated, unusually mesic habitats (the authors, unpublished data). Three species common throughout both the Great Plains and the western United States reach the eastern limit of their ranges at PNM; these include *Candelariella antennaria*, *Phaeophyscia nigricans*, and *Physcia biziana* (CNALH 2016). A fourth species, *Acarospora erythrophora*, is apparently rare in the Great Plains, with its distribution centered in northern Mexico (Knudsen 2007a). Finally, within North America, *Caloplaca lobulata* appears to be primarily a Great Plains species, reaching the eastern limit of its range at PNM (the authors, unpublished data). Of the 84 saxicolous taxa at PNM, none appear to be at their western limit but five species—*Acarospora strigata*, *Caloplaca pratensis*, *C. soralifera*, *Rinodina castanmelodes*, and *Verrucaria sphaerospora*—appear to be at or near the eastern edge of their ranges (CNALH 2016).

*Quantitative Studies of Saxicolous Lichen Communities.* — Transect sampling data revealed a distinct community of lichens associated with extensive Sioux Quartzite exposures at PNM (Table 2). A total of 43 taxa were recorded; 15 of these occurred in only a single transect. Although composition varied among the different cliff level transects, all three had similar species diversity and relative dominance patterns, with approximately half of all coverage accounted for by the five most abundant lichens at each cliff height. All three cliff levels were essentially vertical faces. Although one would expect that there would be significant humidity, and possibly shading, gradients from upper to lower cliff, this was reflected only in composition, but not in patterns of occupancy (coverage) or overall diversity.

The degree of species similarity among the sampling transects, as determined using Sørensen's index of similarity (Table 3), reinforces the impression of the unique nature of the Flats transect as compared with transects from the three different cliff heights. A lichen species was considered to be dominant within a particular transect if it had one of the top five highest RIV<sup>200</sup> values for that transect. Only *Physcia subtilis* was dominant in all four transects; *Xanthomendoza fallax* was dominant in all three cliff transects. Three of the top five dominants in the Flats transect were not dominant in any of the cliff transects.

Table 2 shows that the Flats transect had greater overall species diversity (species per transect) than did any of the three Cliff transects. The average number of species per quadrat for the Flats transect exceeded that of each of the Cliff transects by at least 65%. The Flats transect also had nearly twice the mean cover-abundance totals (per quadrat) of any of the Cliff transects (Table 4). This increased lichen diversity and coverage of the Flats may reflect the increased moisture availability on horizontal surfaces versus vertical surfaces. Another factor is the presence of varying amounts of aeolian or fluvially deposited silt on portions of the outcrops, increasing mineral availability and moisture retention.



<b>RIV<sup>200</sup> Rank/ Transect</b>	<b>Flats</b>	<b>Upper Cliff</b>	<b>Mid-Cliff</b>	<b>Lower Cliff</b>
<b>1</b>	<i>Dimelaena oreina</i> (9.22)	<i>Phycia subtilis</i> (14.31)	<i>Phycia subtilis</i> (15.55)	<i>Phycia subtilis</i> (14.35)
<b>2</b>	<i>Aspicilia</i> spp. (7.64)	<i>Dimelaena oreina</i> (12.95)	<i>Xanthomendoza fallax</i> (9.69)	<i>Phaeophycia adiastrum</i> (12.19)
<b>3</b>	<i>Phycia subtilis</i> (6.98)	<i>Xanthomendoza fallax</i> (9.01)	<i>Phycia halei</i> (7.96)	<i>Xanthomendoza fallax</i> (8.66)
<b>4</b>	<i>Rhizocarpon disporum</i> (6.52)	<i>Phycia dakotensis</i> (8.85)	<i>Rinodina siouxiana</i> (6.85)	<i>Xanthomendoza weberi</i> (7.55)
<b>5</b>	<i>Candelariella vitellina</i> (6.26)	<i>Rinodina siouxiana</i> (7.55)	<i>Candelaria concolor</i> (6.62)	<i>Rinodina siouxiana</i> (7.32)
<b>Mean number of taxa per quadrat:</b>				
	15.1	9.4	9.2	8.3
<b>Mean cover-abundance totals per quadrat:</b>				
	25.4	13.3	13.1	13.5

**Table 4.** Five highest-ranked lichen species by Relative Importance Value (RIV<sup>200</sup>) for each community with comparison of frequency and cover-abundance averages among transects.

#### ANNOTATED LIST OF THE LICHENS, LICHENICOLOUS FUNGI, AND ALLIED FUNGI OF PIPESTONE NATIONAL MONUMENT

The list below enumerates all of the lichens, lichenicolous fungi (#), and allied fungi (^) currently reported from Pipestone National Monument. In general, we follow the nomenclatural concepts of Esslinger (2015). Although we adopted a conservative taxonomy for Lecanoraceae and Teloschistaceae, changes recently proposed by Zhao et al. (2015) and Arup et al. (2013), which seem likely to be taken up more broadly in the future, are included here in brackets. For each taxon, a description of substrate is given and an abundance indicator is provided for Advaita collections. These data apply only to the monument site; some lichens have different predilections elsewhere in their range. In some cases, brief synopses of salient morphological features are provided. Herbarium codes follow Thiers (2016), except that Hb. PNM designates the herbarium at Pipestone National Monument. Claims of first published reports for the state are based on Wetmore (2005, 2009b), as supplemented by recent taxonomic treatments known to the authors. Twenty-four species are reported for the first time for Minnesota (\*).

*Acarospora americana* H. Magn. – Uncommon on horizontal Sioux Quartzite outcrops. *Advaita* 7133, 8710 (both KANU), *Vinyard* 1055 (Hb. PNM).

\**Acarospora boulderensis* H. Magn. – Rare, on a Sioux Quartzite cap-rock on top of a quarry wall, and on a massive shaded Sioux Quartzite boulder. *Advaita* 7178, 15148 (both KANU). This species was segregated from *Acarospora badiofusca* (Nyl.) Th. Fr. by Knudsen et al. (2014). *Acarospora boulderensis* produces a squamulose thallus with a photobiont layer interrupted by hyphal bands ca. 10–20 µm wide (vs. a crustose thallus with an uninterrupted photobiont layer in *A. badiofusca*), and a hymenium (80–)100–120(–140) µm high (vs. 60–80(–100) µm high fide Knudsen et al. 2014). For a complete description and illustrations of both species, see Knudsen et al. (2014). First report for Minnesota, although previous reports of *A. badiofusca* may be based on this species.

\**Acarospora contigua* H. Magn. – Common on quartzite outcrops. *Advaita* 7131-A, 15163 (both KANU), *Fink* 598, 611 (both MIN), *Vinyard* 1109 (Hb. PNM), *Wheeler* 16549 (MIN). First report for Minnesota, although previous reports of *Pleopsidium flavum* (Bellardi) Körber may be based on this species. *P. flavum* has been documented from the western edge of the Great Plains and Black Hills but is not known from the eastern Great Plains and all specimens determined as *P. flavum* that we have examined from Minnesota are *A. contigua*. The two genera differ in features of the ascus (see Knudsen 2007b).

\*[*Acarospora erythrophora* H. Magn. – This species is unknown from PNM, but occurs at the adjacent Hiawatha State Game Refuge, on an exposed quartzite outcrop. TLC: rhizocarpic acid, norstictic

- acid, gyrophoric acid. *Wheeler 19596* (MIN). This specimen appears to represent a significant range extension for the species. *Acarospora erythrophora* was previously reported from the southwestern United States and northwestern Mexico (Knudsen 2007a), and is also known to the authors from a small number of historic collections from south-central Kansas [Kiowa Co., *Fearing 397b*, *Fearing 400*, *McGregor 3244* (all KANU)] and from southwest Oklahoma [Comanche Co., *Morse 20447* (KANU)]. *Acarospora erythrophora* may be confused with *Pleopsidium flavum*, which has been documented from the western edge of the Great Plains and Black Hills, but the two differ in features of the ascus, as well as chemistry (see Knudsen 2007b). *Acarospora contigua* occasionally produces a subeffigurate thallus, but that species is more distinctly areolate and lacks norstictic and gyrophoric acids. It is worth noting that Knudsen (2007a) did not report norstictic acid as constituent in *A. erythrophora*, but it occurs in all Great Plains specimens. These are the first reports for Kansas, Minnesota, and Oklahoma.]
- Acarospora fuscata* (Schr.) Th. Fr. – Rare, collected only as an admixture, on ground-level quartzite. *Advaita 8685* (KANU, sub *Lecanora opiniconensis*).
- \**Acarospora strigata* (Nyl.) Jatta – Uncommon on flat top of massive calcareous sandstone blocks of abandoned train trestle. *Advaita 8717* (KANU).
- Acrocordia cavata* (Ach.) R.C. Harris – Uncommon on boles of mature cottonwoods. *Advaita 8680* (KANU).
- \**Agonimia opuntiella* (Buschardt & Poelt) Vězda – Rare, on detritus over soil. *Advaita 12666-B* (KANU).
- Agonimia* sp. 1 – On remains of *Selaginella*. *Advaita 7122* (sub *Amandinea polyspora*), *15108*, *15159* (all KANU). Thallus verrucose to minutely squamulose, dark olive green; cortical cells papillate; ascomata black, smooth, hemispheric, ca. 0.1 mm in diameter; asci 2-spored; ascospores hyaline to pale brown, muriform, ca. 38–51(–72) × 20–25(–35) µm. This species, known to the authors from a handful of specimens from the northern and western parts of the Great Plains, may be the same taxon reported by Freebury (2014) as *Agonimia* cf. *vouauxii* (B. de Lesd.) M. Brand & Diederich. In addition to this species, two other specimens are tentatively assigned to *Agonimia*. Neither bears reproductive structures or the cortical hairs typical of *A. opuntiella*. [1: On sheer west-facing quartzite wall. *Advaita 7198-B* (KANU). Squamules ± flattened. 2: On soil over low, flat quartzite outcrops. *Advaita 15094* (KANU). Squamules ± flattened, blastidiate; no substances detected by TLC.]
- Alyxoria varia* (Pers.) Ertz & Tehler (syn. *Opegrapha varia* Pers.) – Common on cottonwood and bur oak. *Advaita 8682* (KANU).
- Amandinea dakotensis* (H. Magn.) P. May & Sheard – Occasional on exposed branches of American plum. *Advaita 7160*, *Ladd 31009* (sub *Rinodina pyrina*) (both KANU).
- Amandinea polyspora* (Willey) E. Lay & P. May – Somewhat common on detritus [dead leaves and stems of *Selaginella rupestris*]. *Advaita 7122*, *15584-B* (both KANU). On black willow. *Vinyard 1131* (Hb. PNM).
- Amandinea punctata* (Hoffm.) Coppins & Scheid. – Common on wooden fence posts and braces. *Advaita 7151-A*, *Ladd 31001* (both KANU).
- \*#*Arthonia clemens* (Tul.) Th. Fr. *vel aff.* – On apothecia of *Lecanora opiniconensis*. *Fink 643* (MIN, sub *Montanelia tominii*). This appears to be the first report of *A. clemens* infecting *L. opiniconensis*; the previously reported host is *Rhizoplaca* (Grube 2007).
- \**Arthonia muscigena* Th. Fr. – Uncommon, on exposed branches of American plum, and overgrowing terricolous bryophytes. *Advaita 8701-A*, *12652*, *12668* (sub *Cladonia cariosa*), *15105-B* (all KANU). Thallus epiphloedal, of small, grayish-green granules; photobiont chlorococcoid; ascomata convex, rounded to oblong, 0.1–0.3 mm in diameter, matte, dark brown to black; epithecium pale brown to grayish brown; paraphysoids branched above; hypothecium pale to medium reddish brown; asci clavate, 8-spored; ascospores hyaline, 1-septate with unequal to ± equal cells, constricted, ca. 8–11(–13) × 4.5–6 µm. This corticolous member of the *Arthonia exilis* group appears to be common throughout the Great Plains. This is the first documented occurrence for Minnesota, although previous reports of *A. patellata* Nyl. may also be referable to this species. *Arthonia patellata* has larger ascomata (0.3–0.7 mm in diameter) with ± unbranched paraphysoids, dark brown to black hypothecia, and slightly larger spores (9–15 × 3–5 µm) (Coppins & Aptroot 2009). In the Great Plains, *A. muscigena* occurs on smooth or rough, circumneutral bark of a wide variety of woody plant species, and occasionally on detritus (CAM, unpublished data); *A.*



- patellata* is reported to be restricted to the smooth bark of *Populus* species (Coppins & Aptroot 2009).
- ^Arthonia sp. 1** – On open-grown American plum. *Advaita* 7161-A (KANU, sub *Rinodina pyrina*). Thallus endophloedal, resulting in a pale gray discoloration of the bark; photobiont absent; ascomata oblong to elongate, 0.1–0.4 × ca. 0.1 mm, matte, black, sometimes with a few weak branches; epithecium charcoal gray; hypothecium hyaline; asci broadly ellipsoid, 8-spored; ascospores hyaline, 1-septate with unequal cells, ca. 10–11.5 × 3.5–4.5 µm. This species may be the same taxon as *Arthonia* “sp. 44286” of Harris and Ladd (2005). *Arthonia* is poorly known in North America, and sorely in need of revision.
- Arthrosporum populorum** A. Massal. – Common on small exposed branches of green ash and American plum. *Advaita* 7106, 7147, *Ladd* 31009 (sub *Rinodina pyrina*) (all KANU), *Vinyard* 1153 (Hb. PNM, sub *Caloplaca pyracea*).
- \*Aspicilia americana** B. de Lesd. – Abundant on low, flat quartzite outcrops. TLC (all specimens except as noted): unknown terpenoids. *Advaita* 4332, 8708 (both KANU), *Fink* 625 (MIN), *Vinyard* 2058 (Hb. PNM, material insufficient for TLC). First report for Minnesota, although previous reports of *Aspicilia caesiocinerea* may be based on this species.
- Aspicilia cinerea** (L.) Körber – Occasional on quartzite cliffs and low, flat outcrops. All specimens K+ red (norstictic acid). *Advaita* 4333, 7177, 8711, 8712-A, *Ladd* 30982, 30984 (all KANU), *Vinyard* 4098 (Hb. PNM).
- Bacidia bagliettoana** (A. Massal. & De Not.) Jatta – [On exposed earth (Fink 1902).] *Fink* 590, 591 (MIN, n.v.). Although the authors were unable to examine the vouchers cited (as *Biatora muscorum*) in Fink (1902), *Bacidia bagliettoana* is a common terricolous lichen in the northern Plains and is included here based on records downloaded from CNALH (2016).
- Bacidia granosa** (Tuck.) Zahlbr. – On concrete. *Advaita* 15151 (KANU), *Vinyard* 2054 (Hb. PNM). *Bacidia granosa* was recently resurrected by Ekman (2014). It appears to be the common member of the *B. coprodes* group in eastern North America, although *B. coprodes* (Körber) Lettau is known from the Black Hills (Ekman 2014).
- \*Bacidina delicata** (Leighton) V. Wirth & Vězda – Somewhat common; on lower boles of bur oak and green ash, also on bryophytes and on shaded quartzite fragments and tailings in dry ravine and near waterfall. *Advaita* 7172, 7173-B (sub *Enterographa osagensis*), 7197-A, 15137-A, 15138, 15139-A, 15159-B (sub *E. osagensis*) (all KANU).
- Bacidina egenula** (Nyl.) Vězda – Uncommon on quartzite tailings in seasonal creek bed. *Advaita* 7173-B, 7186-A (both KANU).
- Buellia aethalea** (Ach.) Th. Fr. *vel aff.* – Abundant on weathered mounds of quartzite tailings. *Advaita* 7120 (norstictic acid not detected by KOH test), 7176 (TLC: trace norstictic acid), 15099 (norstictic acid detected by KOH test) (all KANU). Specimens are referred here somewhat tentatively and based largely on morphology—particularly by the presence of immersed, rounded to somewhat irregularly shaped apothecia with colorless hypothecia—, as diagnostic tests for *elachista*-brown and *cinereorufa*-green discussed for the species by Bungartz et al. (2007) frequently yield inconclusive results for our material, and norstictic acid is recovered only sporadically. The typically ashy-gray thallus distinguishes *B. aethalea* from *B. nigra*, which has a dark brown thallus and always lacks norstictic acid (Sheard 1969). While material fitting our concept of *B. aethalea* is rather common in the northern Great Plains, the authors have seen few specimens that we believe to be clearly referable to *B. nigra sensu* Sheard (1969). See discussion of *Buellia nigra* under “Synonyms and doubtful and excluded species” below.
- Buellia badia** (Fr.) A. Massal. (syn. *B. turgescens* Nyl. ex Tuck. [see Bungartz & Nash 2004]) – Occasional on low, flat quartzite outcrops. *Advaita* 8706 (KANU, sub *B. tyrolensis*), *Wheeler* 19544 (MIN). *Buellia badia* and *B. tyrolensis* are sometimes difficult to separate in the Great Plains. The species frequently occur together, even overgrowing one another, and occasionally intergrade morphologically. Ascospore sizes overlap and, while conidiospores may be useful in distinguishing the species (fide Bungartz et al. 2007), pycnidia are often rare and difficult to find. We have referred to *B. badia* specimens with a squamulose thallus and sessile apothecia with a prominent margin, and have referred to *B. tyrolensis* specimens with an areolate thallus with a ± well developed, gray to black prothallus and immersed apothecia (often with a thalline veil). However, it is not uncommon for the central areoles of larger thalli of *B. tyrolensis* to become subsquamulose with ± adnate apothecia and for the prothallus to be poorly developed or

occasionally altogether lacking. While there is broad overlap in thallus coloration, the thallus of *B. badia* is frequently more olive brown, while the thallus of *B. tyrolensis* is dark brown to ruddy brown, or often with whitish areole margins. Although we have encountered material referable to *B. badia* on both siliceous rocks and lignum, *B. tyrolensis* appears to show strong fidelity to siliceous rocks. Saxicolous specimens of both *B. badia* and *B. tyrolensis* are often closely associated with *Dimelaena oreina* and may be juvenile parasites of that species.

\****Buellia tyrolensis*** Körb. (syn. *B. novomexicana* B. de Lesd. [see Bungartz 2004]) – Occasional on low, flat quartzite outcrops. *Advaita* 7137, 8706 (both KANU), *Fink* 600 (MIN). First report for Minnesota, although several specimens examined from the state were previously determined as *Buellia nigra*. See discussion of *B. nigra* under “Synonyms and doubtful and excluded species” below.

***Buellia* sp. 1** – Locally common on mounds of weathered quartzite tailings. *Advaita* 7200-A (sub *Lecanora dispersa*), 7200-B, 15099 (sub *Buellia aethalea*), 15100 (all KANU). Thallus chasmolithic to epilithic and gray, developed only around apothecia; apothecia 0.2–0.3 mm diam., sessile, lecideine; exciple brown, HNO<sub>3</sub>-; hypothecium hyaline; paraphyses capitate, distal cells brown, HNO<sub>3</sub>-; ascospores ca. 10–13 × 5–7 µm, septum not thickened during ontogeny; conidia not observed. Not tested by TLC, but some sections appear to be KOH+ yellow (stictic acid?). This species resembles *B. vilis* Th. Fr., but lacks the red-brown to blackish pigment characteristic of that species (Bungartz et al. 2007). It appears to be common on glacial erratics in the northern Great Plains.

***Caloplaca arenaria*** (Pers.) Müll. Arg. [*Rufoplaca arenaria* (Pers.) Arup, Søchting & Frödén] – Uncommon on quartzite tailings. *Advaita* 7169 (KANU).

***Caloplaca chlorina*** *sensu* Wetmore (2005) – Abundant on shaded quartzite tailings in seasonal creek bed. *Advaita* 7126, 7174, 15595 (all KANU). Sterile collections key to *Caloplaca chlorina* (Flotow) H. Olivier, with a gray, dark gray, or brownish gray, areolate thallus producing K+ purple isidio-sorediate diaspores. However, the apothecia of fertile specimens are lecideine with orange discs and prominent, pale orange margins. The species does not appear to be properly included in the *C. cerina* group (Šoun et al. 2011). It may be merely a saxicolous form of *C. lignicola*, or represent an undescribed taxon. It is common on non-calcareous rocks throughout the northern Great Plains; the authors are currently undertaking a broader study of material from the region.

***Caloplaca chrysophthalma*** Degel. [*Solitaria chrysophthalma* (Degel.) Arup, Søchting & Frödén] – Rare, on a cottonwood bole. *Advaita* 8679-A (KANU).

***Caloplaca feracissima*** H. Magn. [*Xanthocarpia feracissima* (H. Magn.) Frödén, Arup & Søchting] – Abundant and dominant on weathered concrete sidewalk; also on calcareous gravel, and on a thin calcareous deposit over a quartzite boulder. *Advaita* 7180, 7189-B (both KANU), *Vinyard* 1099 (Hb. PNM).

\****Caloplaca flavocitrina*** (Nyl.) H. Olivier [*Flavoplaca flavocitrina* (Nyl.) Arup, Søchting & Frödén] – Uncommon on sheer west-facing quartzite cliff. *Advaita* 7201 (KANU). First report for Minnesota, although previous reports of *Caloplaca citrina* (Hoffm.) Th. Fr. are likely to be this species. For the distinction between *C. citrina* and *C. flavocitrina*, see Arup (2006).

***Caloplaca flavorubescens*** (Huds.) J. R. Laundon [*Gyalolechia flavorubescens* (Hudson) Søchting, Frödén & Arup] – Rare; on bur oak and cottonwood boles. *Advaita* 7196, 8679-B (both KANU).

#***Caloplaca grimmiae*** (Nyl.) H. Olivier – Rare, parasitic on *Candelariella vitellina* growing on the slanted flat face of a quartzite boulder. *Advaita* 8709 (KANU).

***Caloplaca holocarpa*** (Hoffm. ex Ach.) M. Wade [*Athallia holocarpa* (Hoffm.) Arup, Frödén & Søchting] – Common on quartzite fragments in seasonal creek bed, and on old fence rails. *Advaita* 7151-C, 7167-A, 8687 (all KANU).

***Caloplaca lignicola*** Wetmore – Rare, collected once on a weathered, fallen wooden fence post. *Advaita* 7154 (KANU).

\****Caloplaca lobulata*** (Flörke) B. de Lesd. [*Calogaya lobulata* (Flörke) Arup, Frödén & Søchting] – Occasional on small exposed branches of green ash and American plum. *Advaita* 12651, 15091 (both KANU). This corticolous species has long been included on the list for North America but those reports were primarily based on saxicolous species probably referable to members of the *C. saxicola* group (e.g., Fink 1935). Its identity and Great Plains distribution will be discussed in a forthcoming paper.



- Caloplaca microphyllina* (Tuck.) Hasse – Dominant on weathered wooden fence braces and posts. *Advaita* 7148 (KANU).
- Caloplaca pratensis* Wetmore – Abundant on old concrete sidewalk; also on flat top of massive calcareous sandstone blocks of an abandoned train trestle. *Advaita* 8720 (KANU).
- Caloplaca pyracea* (Ach.) Zwackh. [*Athallia pyracea* (Ach.) Arup, Frödén & Söchting] – Common on branches and boles of green ash and cottonwoods. *Advaita* 4316, 15106-B (both KANU), *Vinyard* 1153, 2010 (both Hb. PNM). For the distinction between *Caloplaca holocarpa* sensu stricto and other members of the *C. holocarpa* group, including *C. pyracea*, see Arup (2009).
- Caloplaca sideritis* (Tuck.) Zahlbr. – Common on low, flat quartzite outcrops and mounds of tailings; occasional on quartzite cliffs. *Advaita* 7116, 7164, 7170-A, 7170-B (all KANU), *Fink* 613 (MIN, det. C.M. Wetmore).
- \**Caloplaca soralifera* Vondrák & Hrouzek – Abundant on weathered sidewalk; also on calcareous gravel. *Advaita* 7113, 7182 (both KANU).
- Caloplaca stillicidiorum* (Vahl) Lygne – On detritus in wetlands. *Advaita* 12666-B (sub *Agonimia opuntiella*), *Advaita* 12667 (sub *Caloplaca* aff. *thuringiaca*) (both KANU). This species was treated as conspecific with *Caloplaca cerina* (Ehrh. ex Hedwig) Th. Fr. by Wetmore (2007), but Šoun et al. (2011) have presented molecular and ecological evidence supporting its segregation as a distinct species. Our material comports more or less well with ecotype 4 of Šoun et al. (2011).
- Caloplaca subsoluta* (Nyl.) Zahlbr. [*Squamulea subsoluta* (Nyl.) Arup, Söchting & Frödén] – Occasional on low quartzite outcrops; collected once from wooden fence post lying on ground (rare on this substrate). *Advaita* 7113, 7152, 12673-B (all KANU), *Fink* 607 (MIN, det. C.M. Wetmore), *Vinyard* 2192, 2041 (both Hb. PNM).
- Caloplaca thuringiaca* Söchting & Stordeur *vel* aff. – On detritus (dead stems of *Selaginella*) in wetlands. *Advaita* 12667 (KANU). Apothecia zeorine, pale yellow to yellow orange, to 0.3 mm diam.; ascospores 8 per ascus, 9–12.5 × 5–7 µm, isthmus (2.5–)3–5 µm. This species, a member of the *C. holocarpa* group, has not been reported for North America, but our material is similar to a specimen tentatively identified as *C. thuringiaca* by Ulrik Söchting [South Dakota, Edmunds Co., Wetmore 12697 (MIN)]. We are equally tentative about the determination here.
- Caloplaca ulcerosa* sensu Wetmore (2004, 2009a) – Occasional on lower boles of green ash and bur oak. *Advaita* 4321-B (det. C.M. Wetmore), 7155-C, 15102 (all KANU). Vondrák et al. (2013) have noted that North American material referred by Wetmore (2004, 2009a) to *Caloplaca ulcerosa* Coppins & James is morphologically and ecologically distinct from the maritime *C. ulcerosa* sensu stricto. ITS sequence data suggest that this North American element of the *C. ulcerosa* group forms a sister relationship with the continental European species *C. substerilis* Vondrák, Palice & van den Boom, although Vondrák et al. (2013) were unable to find morphological differences between North American *C. ulcerosa* and *C. substerilis*. Pending further investigation of the identity of the North American entity, we here refer it to *C. ulcerosa*.
- Caloplaca ulmorum* (Fink) Fink – Occasional on boles of bur oak and green ash. *Advaita* 7155-A (KANU). This species was treated as conspecific with *Caloplaca cerina* by Wetmore (2007), but Šoun et al. (2011) have presented molecular and morphological evidence which supports segregation as a distinct species, closely related to the European *C. monacensis* (Leder.) Lettau.
- Candelaria concolor* (Dickson) Stein – Abundant on boles and branches of hardwoods; also common on quartzite cliffs and quarry tailings. *Advaita* 4312 (KANU), *Vinyard* 1149 (Hb. PNM).
- Candelaria fibrosa* (Fr.) Müll. Arg. – Rare, on American plum. *Advaita* 8698 (KANU).
- \**Candelariella antennaria* Räsänen – Uncommon on cottonwoods along Pipestone Creek. *Advaita* 8677 (KANU).
- Candelariella aurella* (Hoffm.) Zahlbr. – Occasional on partly shaded concrete cap over a quarry wall; also on wooden fence. *Advaita* 8695-B, 8726, 15107 (all KANU).
- Candelariella efflorescens* R.C. Harris & W.R. Buck – Rare, on wooden fence rail. *Advaita* 15156, 15580 (both KANU). Both specimens are sterile and are referred here to *C. efflorescens* based on the inferred distribution of this species presented in Lendemer and Westberg (2010), and on fertile material of *C. efflorescens* collected ca. 48 km northeast of PNM [Lyon Co., *Advaita* 13847 (KANU)].
- Candelariella lutella* (Vain.) Räsänen – Rare, on wooden fence rail. *Advaita* 15154, 15581 (both KANU).
- Candelariella subdeflexa* (Nyl.) Lettau – Occasional on boles of green ash. *Advaita* 4312-B, 12654 (both KANU).

- Candelariella vitellina* (Hoffm.) Müll. Arg. – Common on quartzite tailings and low, flat outcrops; also on fallen wooden fence post, and detritus in wetlands. *Advaita* 7134, 7153, 7168, 8695-A, 12666-A (all KANU), *Fink* 629 (MIN, det. C.M. Wetmore), *Vinyard* 3055 (Hb. PNM).
- Chrysothrix caesia* (Flotow) Ertz & Tehler (syn. *Arthonia caesia* (Flotow) Körber) – Rare, on base of American plum. *Advaita* 8699 (KANU).
- Circinaria contorta* (Hoffm.) A. Nordin, S. Savić & Tibell (syn. *Aspicilia contorta* (Hoffm.) Kremp.) – Rare, known from a single collection on a massive calcareous sandstone block from abandoned train trestle. *Advaita* 15590 (KANU).
- Cladonia acuminata* (Ach.) Norrlin – A single historic record; on soil. *Fink* 604 (MIN, det. C.M. Wetmore; TLC [fide C.M. Wetmore]: atranorin, norstictic acid).
- Cladonia cariosa* (Ach.) Sprengel – Locally uncommon on soil over low quartzite outcrop. TLC: atranorin. *Advaita* 12660, 12668 (both KANU).
- Cladonia magyarica* Vainio – Common on soil over low quartzite outcrop. TLC (all specimens except as noted): atranorin, fumarprotocetraric acid. *Advaita* 12661 (KANU), *Vinyard* 4093 (TLC: fumarprotocetraric acid not detected, but specimen in poor condition), 5061 (both Hb. PNM).
- Cladonia pyxidata* (L.) Hoffm. – Abundant on soil over low quartzite outcrops. TLC: fumarprotocetraric acid. *Advaita* 7121 (KANU).
- Cladonia rei* Schaerer – On soil near quartzite outcrop; associated with *C. symphy carpia*. TLC: homosekikaic acid. *Advaita* 15095, 15145, 15147, 15586 (all KANU), *Vinyard* 4126 (Hb. PNM).
- Cladonia robbinsii* A. Evans – Occasional on soil over low, flat quartzite outcrops. TLC: usnic acid, barbatic acid. *Advaita* 7183, 8715, *Ladd* 30992 (all KANU).
- Cladonia subcariosa* Nyl. (syn. *Cladonia polycarpoides* Nyl.) – On soil over rock outcrop. TLC: norstictic acid. *Ladd* 30989, 30990 (KANU), *Vinyard* 1148 (Hb. PNM).
- Cladonia symphy carpia* (Flörke) Fr. – On soil near quartzite outcrop; associated with *C. rei*. TLC: atranorin, ± zeorin, psoromic acid. *Advaita* 12669 (KANU), *Vinyard* 4126 (Hb. PNM, sub *C. rei*).
- \**Dermatocarpon arenosaxi* Amtoft – Abundant on quartzite cliffs and flat outcrops, and on thin soil over low flat outcrops. *Advaita* 7107, 7128, 8270, 12671, 12672 (all KANU), *Fink* 615 (MIN), *Ladd* 30993 (KANU), *Vinyard* 2015, 2052, 2173 (all Hb. PNM), *Wheeler* 19546 (MIN). First report for Minnesota, although previous reports of *Dermatocarpon miniatum* (L.) Mann from siliceous substrates may be based on this species.
- Dimelaena oreina* (Ach.) Norman – Abundant on quartzite outcrops. *Advaita* 7112 (KANU), *Fink* 603 (MIN, det. J.W. Sheard as *Rinodina oreina* Ach.), *Vinyard* 2182, 4128 (both Hb. PNM). Populations at PNM are occasionally deficient in usnic acid and have gray thalli.
- Diploschistes muscorum* (Scop.) R. Sant. – Rare, a juvenile parasite of *Cladonia* spp. *Advaita* 7139-A, 15584-A (both KANU), *Vinyard* 1082 (Hb. PNM).
- \**Diplotomma subdispersum* (Mig.) Etayo & Breuss (syn. *Buellia subdispersa* Mig.) – Rare, on huge sandstone blocks of abandoned train trestle. *Advaita* 8720 (sub *Caloplaca pratensis*), 15592 (both KANU). Molina et al. (2002) and Helms et al. (2003) provide evidence for the segregation of *Diplotomma* from *Buellia*. For the distinction between *D. subdispersum* and the more common *D. venustum* (Körber) Körber, see Nordin (1999).
- \**Endocarpon pallidulum* (Nyl.) Nyl. – Common on thin soil over low, flat quartzite outcrops, and occasional on calcareous gravel. *Advaita* 7125, 7129-C, 7184 (all KANU), *Fink* 616 (*Endocarpon* cf. *pallidulum*, but specimen poor; det. by Fink as *E. pusillum* var. *garovaglii* (Mont.) Willey), *Ladd* 31006 (KANU). First report for Minnesota, although previous reports of *Endocarpon pusillum* Hedwig may be based on this species. For the distinction between *E. pallidulum* and *E. petrolepideum*, see Lendemer (2007).
- Endocarpon petrolepideum* (Nyl.) Hasse – Somewhat common, on massive concrete slab in shallow ravine. *Advaita* 15149 (KANU).
- \*#*Enterographa osagensis* C.A. Morse – Parasitic on thalli of *Bacidina delicata* on mossy vertical N face of low Sioux Quartzite outcrop and quartzite quarry tailings in shaded dry creek bed. *Advaita* 7173-B, 15159-B (both KANU). This species, which was reported by Morse (2013) to occur only to about 40°N latitude, is here reported for the first time from Minnesota (this specimen), Nebraska [Nemaha Co.: Morse et al. 24857 (KANU)], and South Dakota [Grant Co.: *Ladd* 30960 (KANU, Hb. Ladd)].
- Flavoparmelia baltimorensis* (Gyelnik & Fóriiss) Hale – Rare, on a pine log imported from boreal forests in northeastern Minnesota for use in the annual Sundance ceremonies. *Advaita* 8705 (KANU).



- Historic collections are from rocks, *Manzel s.n.* (MIN, det. M.E. Hale), and from elm and oak along Sioux Quartzite outcrops, *Vinyard 1158* (Hb. PNM).
- Flavopunctelia flaventior* (Stirton) Hale – Rare, on a weathered wooden fence rail. *Advaita 8697* (KANU).
- Flavopunctelia soledica* (Nyl.) Hale – Rare, on wooden fence rail. *Advaita 15155* (KANU).
- Halecania* sp. 1 – Somewhat common, on shaded quartzite. *Advaita 15140*, *Ladd 31002b* (both KANU).  
Thallus tan to olive green, areolate; vegetative diaspores absent; apothecia semi-immersed to sessile, with thalline margins concolorous with the thallus and disks pale orange to dark reddish brown to black; asci *Catillaria*-type; ascospores ca.  $9\text{--}15 \times 4\text{--}6 \mu\text{m}$ , perispore poorly developed or to ca.  $1.5 \mu\text{m}$  thick; conidia not observed. TLC: argopsin. This species has been collected rather frequently from the sheltered face of siliceous rocks in the northern Great Plains. It may be conspecific with *H. "rheophila"* of Harris and Ladd (2005), and is currently under study.
- Hyperphyscia confusa* Essl., C.A. Morse & S. Leavitt – Common on boles of hardwoods. *Advaita 4323-A*, *8681* (both KANU, det. T.L. Esslinger).
- Hyperphyscia syncolla* (Tuck. ex Nyl.) Kalb – Common on hardwoods. *Advaita 7145-A* (KANU), *Vinyard 2108* (Hb. PNM).
- Imshaugia aleurites* (Ach.) S.F. Meyer – A single historic record on rock outcrop in open woodland. *Vinyard 2064* (Hb. PNM). This record appears to be suspect and is included in the list of accepted taxa only tentatively. *Imshaugia aleurites* is otherwise known in Minnesota only from the Northern Minnesota Wetlands and Northern Lakes and Forests ecoregions (Omernik & Griffith 2008), north of about  $47^\circ\text{N}$  latitude (Brodo et al. 2001). The species has been documented with certainty for the Great Plains only from the Black Hills (Wetmore 1967).
- Lecanora allophana* Nyl. – Rare, on cottonwood boles. TLC: atranorin. *Advaita 8678*, *12664* (both KANU). Both specimens are solediate and lack apothecia, which is typical of material from the Great Plains.
- Lecanora dispersa* (Pers.) Sommerf. [*Myriolecis dispersa* (Pers.) Šliwa, Zhao Xin & Lumbsch] – Abundant on calcareous substrates; also common on quartzite. *Advaita 7171*, *7193*, *7200-A*, *7200-B* (all KANU).
- Lecanora hagenii* (Ach.) Ach. [*Myriolecis hagenii* (Ach.) Šliwa, Zhao Xin & Lumbsch] – Rare, on bark of exposed hackberry roots. *Advaita 15146* (KANU).
- Lecanora meridionalis* H. Magn. – Rare, on a wooden fence rail. TLC: atranorin, roccellic acid. *Advaita 15153* (KANU). KANU specimens of *L. meridionalis* from the Great Plains all appear to lack gangeloidin. This is evidently unusual in material from eastern North America (Brodo 1984), but also true of specimens from the Sonoran region (Ryan et al. 2004) as well as type collection (Brodo 1984).
- Lecanora muralis* (Schaerer) Rabenh. [*Protoparmeliopsis muralis* (Rabenh.) Choisy] – Occasional on low, flat outcrops. TLC: usnic acid, zeorin, leucotylin. *Advaita 7140* (KANU), *Fink 638* (MIN, det. B.D. Ryan).
- Lecanora opiniconensis* Brodo [*Rhizoplaca opiniconensis* (Brodo) Leavitt, Zhao Xin & Lumbsch] – Common on flat, low quartzite outcrops. TLC (all specimens): usnic acid, placodiolic acid, 1–2 unknown terpenoids. *Advaita 7132-A*, *8685* (both KANU), *Fink 599*, *642* (both MIN, det. B.D. Ryan), *Vinyard 1081* (Hb. PNM).
- Lecanora saligna* (Schrader) Zahlbr. – Occasional on weathered fence rails. *Advaita 8688* (KANU).
- Lecanora sambuci* (Pers.) Nyl. [*Myriolecis sambuci* (Pers.) Clem.] – Rare; on bole of mature cottonwood. *Advaita 8678-B* (KANU).
- Lecanora strobilina* (Spreng.) Kieffer – Uncommon on weathered fence rails. *Advaita 8693*, *8694* (both KANU).
- Lecanora subintricata* (Nyl.) Th. Fr. – Rare; on bole of bur oak. *Advaita 7145-B* (KANU).
- Lecanora symmicta* (Ach.) Ach. – Rare on wooden fence posts. *Advaita 15157* (TLC: usnic acid, zeorin), *15582* (both KANU).
- Lecidea tessellata* Flörke – Known from a single collection from a quartzite outcrop in a woodland area. TLC: confluent acid (major), 2'-O-methylmicrophyllinic acid (minor). *Vinyard 2082* (Hb. PNM).
- Lecidea turgidula* Fr. *vel aff.* – Collected once on partly shaded wooden fence rail. TLC: no substances detected. *Advaita 8696* (KANU). This species is evidently rare in the Great Plains outside of the Black Hills, where it was collected a number of times by C.M. Wetmore (Wetmore 1967). Elsewhere, it has been documented in the region from Kansas [Hamilton Co., on fiberboard affixed to fence, *Morse 16126b* (KANU)] and Nebraska [Cuming Co., West Point, *Bruner 76*

- (NEB, *n.v.*)]. Our material conforms reasonably well with the description of this species by Aptroot et al. (2009), but differs in having slightly larger conidia ( $4.6\text{--}5.4 \times 1.8\text{--}2.4 \mu\text{m}$  vs.  $3\text{--}3.5 \times 1.5\text{--}1.8 \mu\text{m}$  fide Aptroot et al. 2009) and in lacking placodialic acid. The specimens are small, however, and our failure to detect secondary metabolites may be due to the amount of material available for sampling.
- Lecidella carpathica*** Körber – Occasional on low, flat quartzite outcrops. *Advaita* 7118, 7132-B, 8722 (all KANU), *Vinyard* 4072 (Hb. PNM).
- Lecidella elaeochroma*** (Ach.) M. Choisy – Rare, on bole of mature cottonwood. *Advaita* 8684, 15158 (both KANU).
- Lecidella stigmatea*** (Ach.) Hertel & Leuckert – Occasional on shaded quartzite fragments in seasonal creek bed, and on mortar of a footbridge. *Advaita* 7163, 7192 (both KANU), *Fink* 612 (MIN, det. C.M. Wetmore).
- Lepraria finkii*** (B. de Lesd.) R.C. Harris – Uncommon on partly shaded, sheer vertical face of quartzite cliffs; also on bur oak near falls and on a soft decaying wood stump. TLC (all specimens except as noted): atranorin, zeorin, stictic acid aggregate, unknown dibenzofurans. *Advaita* 4336 (det. J.C. Lendemer as *L. lobificans* Nyl., TLC: dibenzofurans not detected), 7199, 7156-B (TLC: dibenzofurans not detected), 12656, 12657, *Ladd* 30981 (all KANU). Previous reports of *Lepraria lobificans* Nyl. for Minnesota likely belong to this species. See Lendemer (2013) for discussion.
- #*Lichenodiplis lecanorae*** (Vouaux) Dyko & D. Hawksw. *vel aff.* – On apothecia of *Caloplaca pyracea* and *C. holocarpa*. *Advaita* 7106 (sub *Arthrosporum populorum*), 7200-A (sub *Lecanora dispersa*), 15106-B (sub *C. pyracea*) (all KANU). Conidia are ca.  $6.5\text{--}10 \times 2.5\text{--}3.5 \mu\text{m}$ , somewhat larger than reported by Diederich (2004) for *Lichenodiplis lecanorae* ( $4\text{--}7.5 \times 2\text{--}3 \mu\text{m}$ ).
- Lichinaceae, genus 1** – Uncommon on exposed quartzite. *Advaita* 7129-A, 7129-B (both KANU). Thallus minutely fruticose, sterile.
- Lichinaceae, genus 2** – On seepage tracks of quartzite outcrops. *Advaita* 7135-A (KANU, sub *Rinodina siouxiana*). Thallus crustose; hymenium KI-; ascospores 8 per ascus, hyaline, simple, ca.  $6.5\text{--}9 \times 4.5\text{--}5 \mu\text{m}$ .
- Montanelia tominii*** (Oxner) Divakar A. Crespo, Wedin & Essl. (syn. *Melanelia tominii* (Oksner) Essl.) – Rare; one modern collection from exposed quartzite fragments above the cliffs. TLC (all specimens): gyrophoric acid, ovoic acid. *Advaita* 4337 (KANU), *Fink* 594, 621, 643 (all MIN, det. T.L. Esslinger as *Melanelia tominii*).
- Parmelia sulcata*** Taylor – Rare, on wood of a soft decaying decorticate stump. *Advaita* 7156-A (KANU).
- Parmotrema reticulatum*** (Taylor) M. Choisy – On oak and elm. *Vinyard* 2077 (Hb. PNM).
- Peltigera didactyla*** (With.) J.R. Laundon – Rare, on soil over low quartzite outcrop. *Advaita* 7142 (KANU).
- Peltigera lepidophora*** (Nyl.) Bitter – Rare, on soil over low quartzite outcrop. *Advaita* 7179 (KANU).
- Peltigera polydactyla*** (Necker) Hoffm. – On soil and humus over rock outcrop in woodland area. *Vinyard* 1105 (Hb. PNM).
- Peltigera rufescens sensu lato*** (material insufficient for positive determination) – On rock outcrops, soil, and humus in open woods. *Vinyard* 1093, 1098, 2095 (all Hb. PNM).
- Peltula euploca*** (Ach.) Poelt ex Ozenda & Clauzade – Uncommon, on massive vertical quartzite wall. *Advaita* 15142, *Ladd* 30994, 30999 (all KANU).
- Phaeophyscia adiastrum*** (Essl.) Essl. – Abundant on shaded quartzite fragments, boulders, and outcrops. *Advaita* 4325, 4331, 7162, *Ladd* 30987 (all KANU).
- Phaeophyscia ciliata*** (Hoffm.) Moberg – Occasional on boles of box elder and branches of American plum. *Advaita* 4324-B (det. T.L. Esslinger), 15106-A (both KANU).
- Phaeophyscia hirsuta*** (Mereschk.) Essl. – Common on hardwood boles and quartzite cliffs. *Advaita* 4324-A (KANU), *Vinyard* 2099 (Hb. PNM).
- Phaeophyscia nigricans*** (Flörke) Moberg – Common on vertical side of concrete bridge. *Advaita* 12665, 15097 (both KANU).
- Phaeophyscia orbicularis*** (Necker) Moberg – Occasional on massive shaded Sioux Quartzite fragments. *Advaita* 15144 (KANU).
- Phaeophyscia pusilloides*** (Zahlbr.) Essl. – Rare, on bole of mature bur oak. *Advaita* 4314-B (KANU).
- Phaeophyscia sciastra*** (Ach.) Moberg – Uncommon on runoff zone over low, flat quartzite outcrops. *Advaita* 4320 (det. T.L. Esslinger), 7143 (both KANU), *Fink* 618 (MIN, det. C.M. Wetmore).



- Physcia adscendens* (Fr.) H. Olivier – Uncommon on weathered fence rail. *Advaita* 8691 (KANU), *Vinyard* 2029 (Hb. PNM).
- Physcia aipolia* (Ehrh. ex Humb.) Fűrnr. – Rare, on boles of bur oak. *Advaita* 7195, 15101 (both KANU).
- Physcia biziana* (A. Massal.) Zahlbr. – Occasional on boles of mature cottonwoods. *Advaita* 8683 (KANU).
- Physcia caesia* (Hoffm.) Fűrnr. – Abundant on quartzite outcrops, fragments, and quarry tailings. *Advaita* 4328, 4334 (both KANU).
- Physcia dakotensis* Essl. – Abundant on quartzite outcrops. *Advaita* 4193 (KANU [paratype], det. T.L. Esslinger).
- Physcia dubia* (Hoffm.) Lettau – Occasional on low quartzite outcrops and quarry tailings. *Advaita* 7117, 7123-B (KANU), *Vinyard* 6011 (Hb. PNM).
- Physcia halei* J.W. Thomson – Common on quartzite outcrops. *Advaita* 7114 (KANU), *Fink* 601, 624 (det. C.M. Wetmore) (both MIN), *Ladd* 30998 (KANU).
- Physcia millegrana* Degel – On box elder and elm. *Vinyard* 2087 (Hb. PNM, sub *Punctelia bolliana*).
- Physcia phaea* (Tuck.) J.W. Thompson – Uncommon on shaded quartzite boulders. *Advaita* 7149, *Ladd* 30998 (both KANU).
- Physcia stellaris* (L.) Nyl. – Dominant on branches of hardwood trees and shrubs. *Advaita* 4315, 15098 (both KANU), *Vinyard* 1139, 2049 (both Hb. PNM).
- Physcia subtilis* Degel. – Dominant on quartzite outcrops; the most common and widely distributed saxicolous lichen at PNM. *Advaita* 7109, 15162 (both KANU), *Fink* 634 (MIN), *Vinyard* 2142, 6019 (both Hb. PNM).
- Physciella chloantha* (Ach.) Ellis – Abundant on boles of hardwoods and on massive quartzite exposures. *Advaita* 4322, 7165 (both KANU).
- Physciella melanchra* (Hue) Essl. – Dominant on boles of hardwoods; abundant on shaded quartzite fragments. *Advaita* 4321, 7166, 8680-B (all KANU), *Vinyard* 1084, 2102 (both Hb. PNM).
- Physconia leucoleiptes* (Tuck.) Essl. – Rare; on massive, sloping quartzite face in vicinity of waterfall. *Advaita* 4327 (KANU).
- Placidium squamulosum* (Ach.) Breuss – Uncommon on thin soil over low quartzite outcrops. *Advaita* 7144-A (KANU).
- Polyblastia cupularis* A. Massal. – Rare, on flat top of massive calcareous sandstone blocks of abandoned train trestle. *Advaita* 8724, 15598 (both KANU).
- \**Pseudosagedia chlorotica* (Ach.) Hafellner & Kalb. – On quartzite. *Ladd* 31002a (KANU). *Pseudosagedia chlorotica* has previously been collected in the Great Plains in Oklahoma [Comanche Co., *Morse* 20473a (KANU); Osage Co., *Morse & Ladd* 14682b (KANU)]. The species appears to be rare in the region, where it is likely limited by the scarcity of appropriate habitat. Despite intensive field work, it has not been discovered in the adjacent Ozark Highlands (Harris & Ladd 2005). First reports for Minnesota and Oklahoma.
- \**Psoroglaena dictyospora* (A. Orange) Harada – Rare, on the lower bole of a mature bur oak and on litterfall. *Advaita* 7197-B, 15139-B (both KANU). This species was reported new to North America by Will-Wolf (1998), based on specimens collected in Badlands National Park, South Dakota. It has subsequently been collected in scattered localities throughout the Great Plains and eastern United States (CNALH 2016, CAM unpublished data) and is likely more common than collection records would suggest.
- Punctelia bolliana* (Müll. Arg.) Krog – Uncommon, two recent collections from bur oak near waterfall. *Advaita* 12655, *Ladd* 31010 (both KANU), *Vinyard* 1159, 2079, 2087 (all Hb. PNM).
- \**Punctelia missouriensis* G. Wilh. & Ladd – Single collection from oak tree. *Vinyard* 2075 (Hb. PNM).
- Punctelia rudecta* (Ach.) Krog – Uncommon on massive vertical quartzite wall. *Advaita* 7198-A (KANU).
- Ramalina culbersoniorum* LaGreca – Rare, on weathered fence rails. *Advaita* 8689 (TLC: divaricatic acid), 15583 (TLC: no substances detected) (both KANU). *Advaita* 15583 may be referred to the largely sympatric *R. americana* Hale (LaGreca 1999). However, the specimen is very small, and it cannot be ruled out that the failure to detect secondary metabolites is due to the paucity of material available for sampling.
- Ramalina intermedia* (Delise ex Nyl.) Nyl. – A single historic record; TLC: usnic acid, homosekikaic acid. *Fink* 641 (MIN, det. C.M. Wetmore). Fink's collection label reads "on large granite boulder," and the substrate was recorded as "a large bowlder [sic]" in Fink (1902). We assume that the substrate cited on Fink's label is merely an error in recording, as there are no granite boulders present at

- PNM. The first author has found *R. intermedia* on shaded vertical Sioux Quartzite cliffs in southeast South Dakota, ca 39 km southwest of PNM [Minnehaha Co., *Advaita* 3487, 7627 (KANU)].
- Rhizocarpon disporum*** (Nägeli ex Hepp) Müll. Arg. – Abundant on quartzite boulders and outcrops. *Advaita* 7111 (KANU), *Fink* 620, 693 (both MIN, det. C.M. Wetmore), *Vinyard* 3088 (Hb. PNM).
- Rhizoplaca chrysoleuca*** (Sm.) Zopf *sensu lato*. – Common on slanting faces of large quartzite boulders. *Advaita* 7110, 12662 (TLC: usnic acid, pseudoplacodiolic acid, unknown) (both KANU), *Fink* 617, 644 (both MIN, det. B.D. Ryan as *Rhizoplaca* cf. *subdiscrepans*), *Vinyard* 2205 (TLC: usnic acid, pseudoplacodiolic acid, psoromic acid), 3031 (TLC: usnic acid, pseudoplacodiolic acid, unknown, psoromic acid) (both Hb. PNM), *Wheeler* 19554 (MIN, TLC: usnic acid, pseudoplacodiolic acid, unknown). Specimens from the northeastern Great Plains appear to be somewhat intermediate between typical *R. chrysoleuca* and *R. subdiscrepans* (Nyl.) R. Sant., comprising thalli that range from crustose to subumbilicate, with a very narrow lower cortex and oblong holdfasts. Consequently, they are here referred to *R. chrysoleuca sensu lato*. For further discussion of this entity, including its unusual chemistry, see Brodo (1986).
- Rinodina cana*** (Arnold) Arnold – Uncommon, on quartzite fragments in runoff zone on low quartzite outcrops. *Advaita* 7123-C, 15141 (both KANU), *Vinyard* 2041 (Hb. PNM, sub *Caloplaca subsoluta*).
- Rinodina castanmelodes*** Mayrhofer & Poelt – Uncommon on flat top of massive calcareous sandstone blocks from abandoned train trestle. *Advaita* 8716, 15596 (both KANU).
- Rinodina destituta*** (Nyl.) Zahlbr. – Rare, on small rock fragment in moist drainage area over low quartzite outcrops. *Advaita* 7123-A (KANU).
- Rinodina freyi*** H. Magn. – Rare, on weathered fence rail. *Advaita* 8690, 8693 (sub *Lecanora strobilina*) (both KANU).
- Rinodina populicola*** H. Magn. – Uncommon on branches of American plum. *Advaita* 7161-B, 8700 (both KANU).
- Rinodina pyrina*** (Ach.) Arnold – Occasional on small branches of green ash and American plum; also on wooden fence. *Advaita* 7146, 7161-A, 8686, 12653, 15105-A, *Ladd* 31009 (all KANU).
- Rinodina siouxiana*** Sheard – Common on vertical quartzite cliffs; occasional on low, flat outcrops. *Advaita* 7115, 7135-A, 7141, 7167-B, 15143 (all KANU), *Fink* 632 (MIN).
- Sarcogyne regularis*** Körber – Rare, collected once on thin calcareous film over surface of exposed quartzite boulder. *Advaita* 7189-A (KANU).
- Scoliciosporum umbrinum*** (Ach.) Arnold – Collected only as admixtures on quartzite outcrops. *Advaita* 7176-B (KANU), *Vinyard* 3088 (Hb. PNM, sub *Rhizocarpon disporum*).
- Staurothele areolata*** (Ach.) Lettau – Abundant on mortar, calcareous gravel, and low, flat, often-inundated quartzite. *Advaita* 7127-B, 7191, 15152, *Ladd* 30985, 30986 (all KANU).
- Staurothele drummondii*** (Tuck.) Tuck. – Common on calcareous gravel over ground-level quartzite outcrops. *Advaita* 7181-B, 15150 (both KANU), *Fink* 595, 619, 622, 628 (all MIN, det. J.W. Thomson), *Ladd* 31005 (KANU).
- Staurothele fissa*** (Taylor) Zwackh – A single historic record; on quartzite. *Fink* 635 (MIN, det. J.W. Thomson).
- Staurothele monicae*** (Zahlbr.) Wetmore – Uncommon on mortar and quartzite flagstones of foot-bridge. *Advaita* 7191-B (KANU).
- #*Stigmidium* sp. 1** – On *Endocarpon pallidulum*. *Advaita* 12673-A (KANU). Perithecia ca. 0.1 mm diam.; periphyses present; hamathecium KI+ pale blue; asci KI-; ascospores ca. 8/ascus, hyaline, 1-septate, narrowly clavate, 14.5–18 × 4.5–5.5 µm.
- Strigula americana*** R.C. Harris *vel aff.* – Rare, on bark of exposed roots of green ash near creek. *Advaita* 15135-B (KANU, conf. J.C. Lendemer). Ascospores in this specimen and another from Kansas [Leavenworth Co., *Morse* 16473a (KANU, conf. J.C. Lendemer)] resemble those of *S. americana* in shape; however, they are larger (24.2–38.1 × 4.7–8.4 µm vs. 17–27 × 4–5.5 µm fide Harris 1995), biguttulate or occasionally with 3 fine septa, often somewhat lunate in outline and with unequal, flask-shaped cells.
- Strigula jamesii*** (Swinscow) R.C. Harris – Rare, on mossy base of green ash by waterfall. *Advaita* 15137-B (KANU).
- Teloschistes chrysophthalmus*** (L.) Th. Fr. – Common on small exposed branches of green ash and American plum. *Advaita* 7157, 15093 (both KANU), *Vinyard* 1145 (Hb. PNM).



- \**Verrucaria calkinsiana* Servít – Uncommon on shaded block of concrete at old dam site. *Advaita* 7185 (KANU). First report for Minnesota, although previous reports of *V. muralis* Ach. may be based on this species.
- \**Verrucaria furfuracea* (de Lesd.) Breuss – Occasional on shaded block of concrete near old dam site, and on calcareous gravel. *Advaita* 7181-C, 8723, 15589 (sub *Verrucaria* sp. 1) (all KANU).
- Verrucaria nigrescens* Pers. – Rare, on rock fragment in moist drainage area over low quartzite outcrop, and on shaded concrete at old dam site. *Advaita* 7124-B, 7185-B (both KANU).
- \**Verrucaria sphaerospora* Anzi – Uncommon on exposed sloping surfaces of large quartzite boulders. *Advaita* 7119-A, 7119-C, 8707 (all KANU), *Vinyard* 3088 (sub *Rhizocarpon disporum*), 4072 (sub *Lecidella carpathica*) (both Hb. PNM).
- Verrucaria* sp. 1 – Somewhat uncommon on flat top of massive calcareous sandstone blocks of abandoned train trestle. *Advaita* 8718, 8721, 8725, 15587, 15589, 15593, 15594, 15599, 15600 (all KANU). *Verrucaria* sp. 1 resembles *Verrucaria fuscella* (Turner) Winch (= *Placopyrenium fuscillum* (Turner) Gueidan & Cl. Roux), with finely pruinose areoles divided by black lines and with a dark basal layer, but with larger ascospores (12–)15.5–20.5(–22) × (3–)6–10(–11) µm vs. 11–15 × 5–6.5 µm fide Breuss 2007).
- Verrucaria* sp. 2 – Occasional on quartzite. *Advaita* 8271 (KANU). Thallus olive green, comprised of verrucose areoles; perithecia 1 per areole, ca. 130 µm in diameter; involucrellum extending 1/3 of the way to the base of the perithecium; ascospores 11–16 × 4.5–6 µm.
- Verrucaria* sp. 3 – On small quartzite fragments scattered over outcrop seepage track, and on north face of quartzite cliff near waterfall. *Advaita* 7124-B, 15160 (KANU). Thallus greyish brown, rimose-areolate; perithecia immersed, 1 per areolate, ca. 160 ascospores µm in diameter; 13–16 (20) × (7)8–9 µm.
- Verrucaria* sp. 4. – On calcareous sandstone blocks of abandoned train trestle. *Advaita* 15597, 15602 (both KANU). Thallus brown; medulla pale; exciple brown above, pale below; ascospores 17–22 (25) × 6–8 µm.
- Xanthomendoza fallax* (Hepp) Søchting, Kärnefelt & S.Y. Kondr. – Dominant on boles of hardwoods; common on shaded and exposed quartzite. *Advaita* 4313 (KANU), *Vinyard* 1124, 1155, 2028, 2202 (all Hb. PNM).
- Xanthomendoza hasseana* (Räsänen) Søchting, Kärnefelt & S.Y. Kondr. – Common on exposed small branches of hardwoods, including American plum. *Advaita* 4318, 15092 (both KANU).
- Xanthomendoza ulophyllodes* (Räsänen) Søchting, Kärnefelt & S.Y. Kondr. – Occasional on sloping face of massive quartzite cliff. *Advaita* 4326 (KANU).
- Xanthomendoza weberi* (S. Kondr. & Kärnefelt) L. Lindblom – Abundant on boles of hardwoods and on quartzite walls and fragments. *Advaita* 4314-A (KANU), *Vinyard* 2096 (Hb. PNM).
- Xanthoparmelia lineola* (E.C. Berry) Hale – Rare; on low, flat quartzite outcrop. TLC: usnic acid, unknown, trace norstictic acid, salazinic acid aggregate. *Advaita* 8714 (KANU).
- Xanthoparmelia mexicana* (Gyelnik) Hale – Common on low, flat quartzite outcrops. TLC (all specimens): usnic acid, norstictic acid (minor or trace), salazinic acid (major), ±consalazinic acid. *Advaita* 7108, 7130, 7138-A, 7138-B, 12658 (all KANU), *Fink* 589 (MIN, insufficient for TLC, but salazinic acid present, fide M.E. Hale), *Vinyard* 1134, 2044, 2051, 4091 (all Hb. PNM), *Wheeler* 19556 (MIN). The lower cortex of some of these specimens is distinctly brown (though not black), which appears to be atypical for *X. mexicana* elsewhere in the Great Plains.
- Xanthoparmelia viriduloumbrina* (Gyelnik) Lendemer – Uncommon on low, flat quartzite outcrops. TLC (except as noted): usnic acid, norstictic acid, salazinic acid aggregate. *Advaita* 15096 (KANU), *Fink* 637 (MIN, insufficient for TLC, but salazinic acid present, fide M.E. Hale), *Vinyard* 1072 (Hb. PNM). We are uncertain about the separation of *X. viriduloumbrina* from *X. coloradoënsis* (Gyelnik) Hale in the northern Great Plains. Consequently, these specimens are referred here to *X. viriduloumbrina* somewhat tentatively.
- Xanthoria elegans* (Link) Th. Fr. Common on shaded quartzite tailings in seasonal creek bed; occasional on vertical quartzite cliff. *Advaita* 4335 (KANU), *Fink* 592, 603 (both MIN), *Vinyard* 3052 (Hb. PNM).

## SYNONYMS AND DOUBTFUL OR EXCLUDED SPECIES

Below is a full account of all synonyms as well as doubtful and excluded species reported for Pipestone National Monument by earlier authors (Fink 1902, Willson & Vinyard 1986), based on our revision of 37 vouchers deposited by B. Fink in MIN and 65 vouchers deposited by T. Vinyard in Hb. PNM. .

- Acarospora chlorophana* (Wahlenb.) A. Massal. (= *Pleopsidium chlorophanum* (Wahlenb.) Zopf). Reported by Willson and Vinyard (1986), but the specimen is *A. contigua*.
- Aspicilia caesiocinerea* (Nyl. ex Malbr.) Arnold (= *Circinaria caesiocinerea* (Nyl. ex Malbr.) A. Nordin). Reported by Willson and Vinyard (1986). We were unable to locate a voucher for this report.
- Bacidia rubella* (Hoffm.) A. Massal. Reported by Willson and Vinyard (1986), but the specimen is *Amandinea polyspora* (with admixtures of *A. dakotensis* and *Chrysothrix caesia*).
- Biatora muscorum* Hepp = *Bacidia bagliettoana*.
- Buellia nigra* (Fink) Sheard. Reported by Wheeler (1999) from Pipestone Co., but the specimens are *B. badia* (PNM, Wheeler 19544 [MIN]) and *B. tyrolensis* (Hiawatha State Game Refuge, Wheeler 19614 [MIN]). We have examined the majority of the voucher specimens cited by Wheeler (1999) as *B. nigra* for Minnesota and South Dakota, and found none to include material referable to a member of the *B. aethelea* group, since all specimens examined have a dark brown hypothecium. Indeed, they all appear to us to belong to either *B. badia* or *B. tyrolensis*.
- Buellia petraea* (Wulfen) V. Branth. & Rostr. var. *montagnei* (Flot.) Tuck. (? = *Rhizocarpon petraeum* (Wulfen) A. Massal.). Reported by Fink (1902), but the specimens are *Rhizocarpon disporum*.
- Buellia pullata* Tuck. Reported by Fink (1902), but the specimen is *B. tyrolensis*.
- Buellia spuria* (Schaerer) Anzi. Reported by Fink (1902), but the specimen is *Lecidella stigmataea*.
- Caloplaca cinnabarina* (Ach.) Zahlbr. Reported by Fink (1902, as *Placodium cinnabarinum*) and Willson and Vinyard (1986), but the specimens are *C. subsoluta*.
- Cladonia chlorophaea* (Flörke ex Sommerf.) Sprengel. Reported by Willson and Vinyard (1986), but the specimen is *C. magyarica*.
- Cladonia fimbriata* (L.) Fr. Reported by Fink (1902), but the specimen is *C. acuminata*.
- Cladonia fimbriata* var. *tubaeformis* (Hoffm.) Fr. Reported by Fink (1902). We were unable to locate a voucher for this report.
- Cladonia polycarpoides* Nyl. = *C. subcariosa*.
- Collema flaccidum* (Ach.) Ach. Reported by Willson and Vinyard (1986), but the specimen (Vinyard 4095 [hb. PNM]) is a non-lichenized, terricolous cyanobacterium.
- Dermatocarpon fluviatile* (Weber) Th. Fr. (= *D. luridum* (With.) J. R. Laundon). Reported by Willson and Vinyard (1986), but the specimen is *D. arenosaxi*.
- Dermatocarpon lachneum* (Ach.) A. L. Sm. (= *Placidium lachneum* (Ach.) B. de Lesd.). Reported by Willson and Vinyard (1986). The specimen is in poor condition, but appears to be referable to *D. arenosaxi*.
- Dermatocarpon miniatum* (L.) W. Mann. Reported by Willson and Vinyard (1986), but the specimen is *D. arenosaxi*.
- Diploschistes scruposus* (Schreber) Norman. Reported by Fink (1902) as *Urceolaria scruposa*, and by Willson and Vinyard (1986). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *D. muscorum* (CNALH 2016). The voucher collected by Vinyard is *D. muscorum*.
- Endocarpon hepaticum* Ach. (? = *Placidium lacinulatum* (Ach.) Breuss). Reported by Fink (1902). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *P. squamulosum* (CNALH 2016).
- Endocarpon miniatum* (L.) Gaertn. (= *Dermatocarpon miniatum*). Reported by Fink (1902). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *D. miniatum* (CNALH 2016). However, appropriate, calcareous substrate is largely absent from PNM and all Minnesota specimens originally determined as *D. miniatum* that we have examined have turned out to be *D. arenosaxi*. We expect that this collection should also be referred to *D. arenosaxi*.
- Endocarpon miniatum* var. *complicatum* (Lightf.) Schaer. (? = *Dermatocarpon miniatum*). Reported by Fink (1902), but the specimen is *D. arenosaxi*.



*Endocarpon pusillum* Hedwig. Reported by Fink (1902) as *E. pusillum* var. *garovaglii* (Mont.) Willey, and by Willson and Vinyard (1986). The voucher collected by Fink is in poor condition, but appears to be referable to *E. pallidulum*. We were unable to locate the voucher collected by Vinyard.

*Heterodermia hypoleuca* (Muhl.) Trevisan. Reported by Willson and Vinyard (1986), but the specimen is *Punctelia bolliana*.

*Lecanora cinerea* (L.) Sommerf. (= *Aspicilia cinerea*). Reported by Fink (1902), but the specimen (Fink 625 [MIN]) is *Aspicilia americana*. A second specimen deposited in MIN (Fink 633), originally determined by Fink as *L. cinerea* and later redetermined as *A. caesiocinerea*, was not available for review. The presence of *Aspicilia cinerea* at PNM was established by later collections.

*Lecanora muralis* var. *saxicola* Schaer. = *L. muralis*.

*Lecanora rubina* (Vill.) Ach. = *Rhizoplaca chrysoleuca*.

*Lecanora rubina* var. *heteromorpha* Ach. (= *Lecanora heteromorpha* (Ach.) J. Steiner). Reported by Fink (1902), but the specimen is *L. opiniconensis*.

*Lecanora xanthophana* Nyl. (= *Acarospora xanthophana* (Nyl.) Jatta). Reported by Fink (1902), but the specimens are *A. contigua*.

*Letharia vulpina* (L.) Hue – On oak in open elm-oak woodland. Vinyard 1075 (Hb. PNM). The specimen was determined by the collector as *Ramalina intermedia* (Delise ex Nyl.) Nyl., and presumably forms the basis of the report by Willson and Vinyard (1986) for that species. As *L. vulpina* is both conspicuous and unknown to occur naturally east of the High Plains, the attribution of this species to PNM is highly suspect, although it is possible that the specimen was collected from the bark of logs imported for cultural uses.

*Parmelia conspersa* (Ehrh. ex Ach.) Ach. (= *Xanthoparmelia conspersa* (Ehrh. ex Ach.) Hale). Reported by Fink (1902), but the specimens are *X. mexicana* (Fink 589) and *X. viriduloumbrina* (Fink 637).

*Parmelia bolliana* Müll. Arg. = *Punctelia bolliana*.

*Parmelia olivacea* (L.) Ach. var. *prolixa* (Ach.) Zahlbr. (= *Xanthoparmelia pulla* (Ach.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch). Reported by Fink (1902), but the specimens are *Montanelia tominii*.

*Parmelia rudecta* Ach. = *Punctelia rudecta*. Reported by Willson and Vinyard (1986), but the specimen is *P. missouriensis*. The presence of *Punctelia rudecta* at PNM was established by later collections.

*Parmelia substygia* Räsänen = *Montanelia tominii*. Reported by Willson and Vinyard (1986), but the specimen is *Peltigera rufescens sensu lato*. The presence of *Montanelia tominii* at PNM was established by other collections.

*Parmelina galbina* (Ach.) Hale (= *Myelochroa galbina* (Ach.) Elix & Hale). Reported by Willson and Vinyard (1986), but the specimen is *Punctelia bolliana*.

*Peltigera canina* (L.) Willd. Reported by Willson and Vinyard (1986), but the specimen is poor and only determinable by the authors as *P. rufescens sensu lato*.

*Peltigera spuria* (Ach.) DC. (= *P. didactyla*). Reported by Willson and Vinyard (1986), based on a specimen referred here to *P. rufescens sensu lato*. The presence of *Peltigera didactyla* at PNM was established by a later collection.

*Phaeophyscia endococcina* (Körber) Moberg. Reported by Willson and Vinyard (1986), but the specimen is *Dimelaena oreina*.

*Physcia americana* G. Merr. Reported by Willson and Vinyard (1986), but the specimen is *Xanthomendoza fallax*.

*Physcia tenella* (Scop.) DC. Reported by Willson and Vinyard (1986), but the specimen is *P. adscendens*.

*Physcia chloantha* (Ach.) Vainio (= *Physciella chloantha*). Reported by Willson and Vinyard (1986), but the specimen is *Physciella melanchra*. The presence of *Physciella chloantha* at PNM was established by later collections.

*Physcia melanchra* Hue = *Physciella melanchra*.

*Physciopsis syncolla* Tuck. ex Nyl. = *Hyperphyscia syncolla*.

*Physconia deterosa* (Nyl.) Poelt. Reported by Willson and Vinyard (1986), but the specimen is *Parmotrema reticulatum*.

*Placodium cerinum* (Ehrh.) Naeg. & Hepp. var. *sideritis* Tuck. = *Caloplaca sideritis*.

*Placodium cinnabarinum* (Ach.) Nyl. (= *Caloplaca cinnabarina*). Reported by Fink (1902), but the specimen is *Caloplaca subsoluta*.

*Placodium elegans* (Link) DC. = *Xanthoria elegans*.

*Placodium vitellinum* (Ehrh.) Hepp = *Candelariella vitellina*.

*Placynthium nigrum* (Hudson) Gray. Reported by Willson and Vinyard (1986), but the specimen is *Aspicilia cinerea*.

*Pleopsidium chlorophanum* (Wahlenb.) Zopf. Reported (as *Acarospora chlorophana*) by Willson & Vinyard (1986), but the specimen is *A. contigua*.

*Pseudoparmelia baltimorensis* (Gyelnik & Főriss) Hale = *Flavoparmelia baltimorensis*. Reported by Willson and Vinyard (1986), but the specimen is *Imshaugia aleurites*. The presence of *Flavoparmelia baltimorensis* at PNM was established by other collections.

*Pseudoparmelia caperata* (L.) Hale (= *Flavoparmelia caperata* (L.) Hale). Reported by Willson and Vinyard (1986), but the specimen is *F. baltimorensis*.

*Ramalina polymorpha* (Lilj.) Ach. Reported by Fink (1902), but the specimen is *R. intermedia*.

*Rhizoplaca melanophthalma* (DC.) Leuckert & Poelt. Reported by Willson and Vinyard (1986), but the specimen is *R. chrysoleuca*.

*Rinodina oreina* (Ach.) A. Massal. = *Dimelaena oreina*.

*Rinodina pachysperma* H. Magn. Reported by Willson and Vinyard (1986), but the specimen is *R. siouxiana* (with admixtures of *Lecidella carpathica*, *Rhizocarpon disporum*, and *Verrucaria sphaerospora*). Reported by Sheard (2010) on the basis of his own early annotation of Fink 632 (MIN), which is referred herein to *R. siouxiana*. Sheard's report evidently was on oversight, based on taxonomic concepts developed prior to his circumscription of *R. siouxiana*.

*Rinodina sophodes* (Ach.) A. Massal. var. *tephraspis* (Tuck.) Tuck. (= *Rinodina tephraspis* (Tuck.) Herre). Reported by Fink (1902), but the specimen (Fink 632) is *R. siouxiana*. (See comments on *R. pachysperma* above.)

*Staurothele clopima* (Wahlenb.) Th. Fr. = *S. drummondii*. Reported by Willson and Vinyard (1986), but the specimen is *Candelariella vitellina*. The presence of *Staurothele drummondii* at PNM was established by other collections.

*Staurothele umbrina* (Wahlenb.) Hellb. = *S. fissa*.

*Urceolaria scruposa* (Schreber) Ach. (= *Diploschistes scruposus*). Reported by Fink (1902). We were unable to examine the voucher collected by Fink for this report, which has subsequently been determined as *D. muscorum* (CNALH 2016).

*Xanthoparmelia conspersa* (Ehrh. ex Ach.) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. viriduloumbrina*.

*Xanthoparmelia cumberlandia* (Gyelnik) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. mexicana*.

*Xanthoparmelia plittii* (Gyeln.) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. mexicana*.

*Xanthoparmelia taractica* (Kremp.) Hale. Reported by Willson and Vinyard (1986), but the specimen is *X. mexicana*.

*Xanthoria candelaria* (L.) Th. Fr. Reported by Willson and Vinyard (1986), but the specimen is *Xanthomendoza weberi*.

*Xanthoria polycarpa* (Hoffm.) Th. Fr. ex Rieber. Reported by Willson and Vinyard (1986), but the specimen is *Xanthomendoza fallax*.

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# Landfill Lichens: A checklist for Freshkills Park, Staten Island, New York

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**ABSTRACT.** – A checklist of the lichens discovered at Freshkills Park, Staten Island, after three days of surveying, is presented. In 1997 the Freshkills Municipal landfill was capped and the process to convert it to a park was begun. Seventeen species were found in the park, four of which are newly reported for the New York City metropolitan area. Comparison of our list to previous floras and checklists for New York City suggests that even the densely urbanized area of New York City likely hosts a surprisingly heterogeneous and diverse lichen flora.

**KEYWORDS.** – Urban ecology, restoration ecology, recolonization.

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## INTRODUCTION

Lichens are sensitive to air pollution, and systems of using lichens for air quality monitoring, such as those suggested by Hawksworth and Rose (1976), are in widespread use throughout the world (reviewed by: Conti & Cecchetti 2001, Nimis et al. 2002, Szczepaniak & Biziuk 2003), including northeastern North America (Will-Wolf et al. 2015) and the mid-Atlantic region of the United States (Brodo 1966, Will-Wolf et al. 2014). Urban areas generally have very poor air quality, and correspondingly low lichen diversity and abundance (Gries 1999). However, there is evidence that lichens are responding positively to recent improvements in urban air quality in developed countries. For example, in Paris eleven lichen species have recolonized the Jardin du Luxembourg in the past 100 years (Seaward & Letrouit-Galinou 1991). London has also seen considerable returns of lichen diversity and abundance (Davies et al. 2007, Rose & Hawksworth 1981, Larsen et al. 2007). In the United States, research on changes in urban lichen diversity are lacking for most cities, and urban lichen floras are both understudied and the focus of relatively few publications. Thus, many of the changes in urban lichen floras remain as unpublished observations by specialists.

New York City, one of the largest cities in the world, has had relatively little attention paid to its lichen flora when compared with cities like London, Paris and Rome (Larsen et al. 2007, Munzi et al. 2007, Seaward & Letrouit-Galinou 1991). Nonetheless it has had considerably more research attention than most urban areas in the United States. In 1823, 180 species were reported within a 50 mile radius of City Hall, along with a few species from upstate New York and Massachusetts (Halsey 1823). Almost a century later 300 species were reported within a 100 mile radius of city hall, with most of that diversity found in the Palisades of adjacent New Jersey (Woods 1914). In that report, fruticose species such as *Ramalina* and *Cladonia* were reported from Central Park, genera that are now absent from Manhattan (Allen & Howe, unpublished data). Long Island, which includes Brooklyn and Queens, two boroughs of New York City, has received considerably attention, with 279 documented species (Brodo 1968, 2004; Harris 1987; Harris et al. 1987). More recently, 19 species were reported from King and Queens Counties (Delendick 1994), and five species were reported from Highline Park, which is situated in densely urbanized lower Manhattan

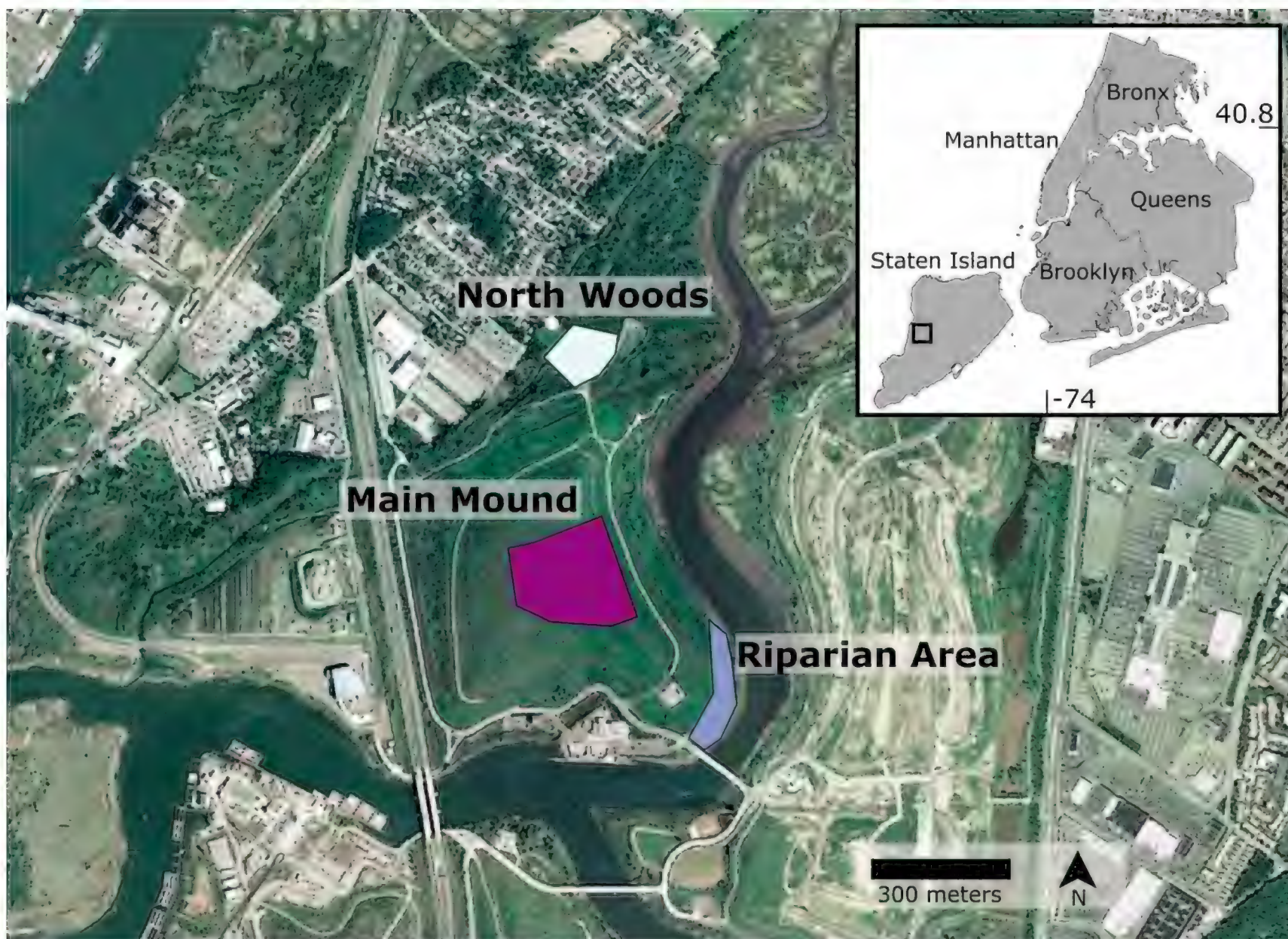
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**Figure 1.** Map of lichen collecting areas at Freshkills Park, North Mound and inset with broader geographic context.

(Stalter 2004). Of the five boroughs, Staten Island has been the least studied, though it has the lowest population density and is now home to Freshkills Park, the largest park in New York City (see below).

Decommissioned (closed) landfills, with new vegetation cover and recently exposed rock substrates, are one example of a novel urban ecosystem type that has been shown to provide habitat for many taxa, including beetles (Do et al. 2014), herbaceous plants (Rahman et al. 2013), butterflies and birds (Camerini & Groppali 2014), and microbial communities that change as the landfill ages (Song et al. 2015). However, decommissioned landfills have not been well studied as habitat for lichens. While there have been studies of lichens near active landfills that show that the surrounding lichens accumulate heavy metals, and their communities simplify (Paoli et al. 2015), the present work presents the first study of lichen colonization of a decommissioned landfill. Freshkills Park, Staten Island, is an engineering and land reclamation marvel (Hirsh 2009). This 8.9 km<sup>2</sup> park covers what was once Fresh Kills Landfill which was opened in 1948 and had become the largest landfill in the world by 1955 (Hirsh 2009). It reached its peak operation in 1986–1987 when it received 26,000,000 kg of trash per day (Hirsh 2009). Two of the mounds ceased operating and were capped in 1997, and the last delivery to the landfill was in the west mound, where the debris from the World Trade Centers were deposited in 2001 (Hirsh 2009). One portion of the park is now open to the public on special days for recreation. Besides serving as a recreational resource, the large park in this highly developed region could also serve as an ecological resource. Increasing our knowledge of the biodiversity in the park is important to understanding its ecological impact on surrounding areas.

In August 2015 we lead groups of students from Macaulay Honors College of the City University of New York in Manhattan to search for lichens on the North Mound of Freshkills Park. Our lichen foray was part of the Macaulay Honors College Bioblitz, an activity that introduces first year students to field science. We were pleasantly surprised to discover a number of lichen species at the site, so we returned to the park after the Bioblitz to search for additional species. Here we present descriptions of the North Mound from a lichenological perspective, as well as a list of the species discovered throughout the park.



## MATERIALS AND METHODS

We spent three days surveying the open portion of the park. Two days were during the Macaulay Honors College Bioblitz, 29-30 August 2015, and the third day the authors explored areas of the park in greater depth with the lead park scientist, Cait Fields. We surveyed the three main areas in the park (Fig. 1). At each site we searched all available substrates and collected a voucher specimen of every species that we found. Vouchers were deposited at The New York Botanical Garden Herbarium (NY). Lichens were identified following standard methods (Brodo et al. 2001) and taxonomy follows Esslinger (2015). Micrographs were taken using a Nikon SMZ1500 microscope fitted with a Nikon DS-Ri7 camera and maps were created in QGIS (QGIS 2016). Figures were prepared using Inkscape (inkscape.com). The following sites were surveyed:

- 1) *Main Mound*—The main mound is the actual capped landfill, which was covered in 1997. A thin layer of soil was added on top of the capping material, which is an impermeable layer of plastic. This area of the park is dominated by grasses, with scattered, young *Robinia pseudoacacia* (black locust) and *Populus deltoides* (cottonwood). No trees were planted in this area, so the few trees are all naturally occurring. The soils at this site are described as Kleinekill silt loam (USDA 2015).
- 2) *North Woods*—North of the mound there is a more densely wooded area. The small section of forest here is dominated by *R. pseudoacacia* with scattered *Prunus serotina* (black cherry). The soils are classified as Secaucus artifactual fine sandy loam with zero to three percent slopes (USDA, 2015)
- 3) *Riparian Zone*—There was a strip of wooded area along the eastern section of the mound bordering the tidal marsh. The dominant tree cover was *R. pseudoacacia*. The soils along the banks of the Main River were Kleinkill silt loam with 15–35% slopes (USDA 2015).

During the Macaulay Honors College Bioblitz, the student participants collected information on cover of crustose, foliose and fruticose lichens using the methodology from the Parks as Classrooms Great Smoky Mountains National Park Schoolyard Lichen Survey. Briefly, transparent sheets were printed with 100 one-centimeter diameter circles arranged in a 10 x 10 grid. Students chose a tree and at chest height on the north, south, east, and west faces of the tree they recorded how many of these circles included crustose, foliose, or fruticose lichens, and converted these values to percent cover. The cover on a total of 13 trees was recorded throughout the study area.

## RESULTS

Seventeen species were discovered in Freshkills Park (Table 1; see the Appendix for annotated checklist). The most frequently observed and collected species were *Amandinea polyspora*, *Lecanora strobilina*, and *Physcia millegrana*. We found one calicioid species, *Phaeocalicium polyporaeum*, and a crust, *Verrucaria* cf. *elaeina*, growing on a brick. *Anisomeridium* sp., *Caloplaca subsoluta*, *Phaeophyscia adiastrata*, *Physciella chloantha*, and *Verrucaria* cf. *elaeina* are newly reported for New York City.

Students who participated in the epiphyte tree cover survey as part of the Macaulay Honors College Bioblitz found that, on average, bark with lichens at Freshkills had 27% cover of epiphytes (though many trees had no epiphytes and were not included in the study). Most of this cover was from foliose lichens (83%), some was from mosses (11%), and a small proportion was from crustose lichens (5.5%). No fruticose lichens were located. The abundance of corticolous lichens was similar in the North Woods and Riparian Area, with 34.9% and 39.5% average foliose cover, and 2.2% and 2.7% average crustose cover, respectively. The lowest abundance of all lichens was found on the Main Mound with 0.2% average foliose cover and 0.05% average crustose cover.

## DISCUSSION

The discovery of 17 species at Freshkills Park was very surprising given the young age of the park (<20 years old) since lichens are often slow to colonize an area (Lie et al. 2009), and its situation over a large landfill in a densely urbanized landscape, an area with very poor air quality. Most thalli of the species we observed were quite small and infrequent, and we suspect that some species on rocks were brought in



Species of Freshkills Park	Halsey 1823	Woods 1914	Brodo 1968; 2014	Delendick 1994	Stalter 2004
<i>Amandinea milliaria</i>	-	-	+	-	-
<i>Amandinea polyspora</i>	-	-	+	-	-
<b><i>Anisomeridium</i> sp.</b>	-	-	-	-	-
<i>Caloplaca feracissima</i>	-	-	+	+	-
<b><i>Caloplaca subsoluta</i></b>	-	-	-	-	-
<i>Candelaria concolor</i>	+	+	+	+	-
<i>Flavoparmelia caperata</i>	+	+	+	-	-
<i>Lecanora dispersa</i>	-	-	+	-	-
<i>Lecanora strobilina</i>	-	-	+	-	-
<i>Leiomonis erratica</i>	-	-	+	-	-
<i>Phaeocalicium polyporaeum</i>	-	-	+	-	-
<b><i>Phaeophyscia adiastrata</i></b>	-	-	-	-	-
<i>Phaeophyscia pusilloides</i>	-	-	+	-	-
<i>Phaeophyscia rubropulchra</i>	-	-	+	-	-
<i>Physcia millegrana</i>	-	-	+	+	-
<b><i>Physciella cloantha</i></b>	-	-	-	-	-
<i>Pyrrhospora varians</i>	-	-	+	-	-
<b><i>Verrucaria</i> cf. <i>elaeina</i></b>	-	-	-	-	-

**Table 1.** List of species collected at Freshkills Park and comparison to previous floras in parts, or all, of the New York City Metropolitan Area (+ indicates presence in a list, - indicates absence from a list, names in bold-face type are new records for NYC).

with filling material (e.g., *Lecanora dispersa*). However, the corticolous species most likely dispersed to the study area from surrounding areas because the park is primarily maintained as a grassland and most trees have established naturally. This suggests that there are populations of all reported corticolous species occurring elsewhere within dispersal distance. Many of the collections for this flora were made from fallen trees and rotting logs, highlighting the importance of these substrates as habitat, which has been shown previously in many settings (Bunnell et al. 2008, Hauck et al. 2012).

The difference among species lists for lichens in the New York City metropolitan region is quite striking (Table 1). Unsurprisingly, historical lists (e.g., Halsey 1823, Woods 1914) reported many fruticose species, species associated with cyanobacteria, and other groups of lichens that are now quite rare throughout the region; none of these were not found at Freshkills Park. Additionally, the lichen flora of Long Island is much richer than the flora reported here, likely due to the much larger land area along with presence of older natural habitats (Brodo 1968, Harris 1987, Harris et al. 1987). Surprisingly, we found a number of species that have not been reported from the greater New York metropolitan area, suggesting that the heterogeneous, urbanized areas in and around New York City could host correspondingly distinct lichen floras. A thorough search of the region would likely uncover a surprisingly rich and distinctive lichen flora for such a densely populated and urbanized area, especially when special attention is paid to the crustose species, which represented 65% of the diversity at Freshkills Park. The surveys by the Macaulay Honors College students found that only 5.5% of the total epiphyte cover consisted of crustose lichens; the highest cover group, foliose lichens, consisted mainly of the very abundant *Physcia millegrana*.

Many of the species found at Freshkills are already described as city (or pollution) tolerant in other contexts. Nimis and Martellos (2008), in their ITALIC Information System on Italian Lichens database categorized several of the species we found as rather to highly tolerant of eutrophication in Italy, including

*Candelaria concolor*, *Lecanora dispersa*, and *Physciella chloantha*. Nimis and Martellos also included several species of *Caloplaca* and *Verrucaria* in the eutrophication-tolerant group, although not the species that we found at Freshkills. In surveys after landfill enlargement in central Italy, Paoli et al. (2012), found several of the Freshkills lichens in their study: *Candelaria concolor*, *Lecanora strobilina*, and *Physciella chloantha*. One of the lichens we found on rock, *Leimonis erratica*, was also one of the most abundant lichens on the mountainsides of Palmerton, Pennsylvania, near the former location of a zinc smelter (Howe & Lendemer 2010). *Candelaria concolor*, *Phaeophyscia rubropulchra*, *Phaeophyscia pusilloides*, *Physcia millegrana*, and *Physciella cloantha* are listed by Will-Wolf et al. (2015) as lichens of the northeastern United States that are tolerant to acidic air pollution.

*Flavoparmelia caperata* presents an interesting case of a lichen that may be tolerant of some, but not all urban conditions. It was the most common lichen near in the landfill studied by Paoli et al (2015), and though present in those marginal habitats near the landfill, it did not thrive there, as measured by indicators of photosynthetic activity and secondary compound production. Additionally, Brodo (1961) found that *F. caperata* was relatively pollution intolerant, as transplants of the species died within four months of establishment in Brooklyn. Will-Wolf (2015) also ranked *F. caperata* as a relatively intolerant species, and it is rarely found in Philadelphia (Howe, unpublished data).

Some of the species we found are not frequently reported from cities; these include *Amandinea milliaria*, *Anisomeridium* sp., *Phaeocalicium polyporaeum*, *Phaeophyscia adiastrum*, *Pyrrhospora varians*, and *Verrucaria elaeina*. The first four of these are crustose species that are easily overlooked and may actually be more widespread in cities. The discovery of a *Phaeocalicium* species, which grows as stubble on a polypore fungus, might not be considered surprising because the host organism, *Trichaptum bifforme* (Fr.) Ryvarden is widespread in North America (Hutchinson, 1987), and this species has previously been reported from urban parks (McMullin et al. 2014). *Phaeophyscia adiastrum* is common in the northeastern United States (Hinds & Hinds 2007), but has not been reported in the other earlier studies of the New York Region because most studies were conducted previous to 1977, when the species was described (Esslinger 1977). The absence of some commonly reported urban lichens is also notable. *Parmelia sulcata* (L.) Ach. has been reported from many urban settings (reviewed by Conti & Cecchetti 2001), and it, along with *Hypogymnia physodes* (L.) Nyl., demonstrate high tolerance for atmospheric SO<sub>2</sub> (Prescott et al. 2015). The lichens listed by Will-Wolf et al. (2015) as tolerant of air pollution included *P. sulcata* along with several other lichens we did not find, including *Physconia leucoleptes* (Tuck.) Essl., *Xanthomendoza fallax* Sørensen et al., and *Flavopunctelia flavescentior* (Stirt.) Hale.

Our work provides baseline data for the lichen diversity at Freshkills Park, and is the first we know of specifically devoted to reporting on lichens at a decommissioned landfill. It is also the first to document the lichen flora specifically of Staten Island. At the time of the survey only a portion of the park was open, as much of it is still transitioning from being a landfill. Once the entire park is complete, a thorough search of all four mounds would certainly be warranted. Many of the specimens from this study were from *Prunus* and *Robinia* trees, but as tree diversity increases in the future, the corresponding epiphytic diversity will likely also increase. Repeated visits to the park in the coming decades will likely yield interesting results because more trees are being planted at the park as part of the Million Trees NYC program (Zalensky et al. 2014). As those trees mature, they will provide substrates for a wider variety of lichens (Lie et al. 2009), especially as the woody vegetation expands over the capped mounds, perhaps through bird dispersal (Robinson & Handel 1993). The tidal marsh will likely also prove to be valuable lichen habitat, as lichen species richness increases with more air moisture (Coffey & Fahrig 2012). As large and small-scale environmental change continues in densely urbanized landscapes across eastern North America, tracking the associated lichen flora will provide important insights into how lichens are both negatively and positively impacted by anthropogenic change.

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#### APPENDIX – ANNOTATED CHECKLIST OF FRESHKILLS LICHENS

The checklist presented below is arranged alphabetically by genus and species. Voucher specimens deposited at NY are cited for each species, and for each voucher specimen the locality data are provided. Many of the most common species are illustrated in two plates following the checklist. The four sites visited for the survey are indicated in the list using abbreviated codes as follows:

**NM** – U.S.A. NEW YORK. RICHMOND CO.: Freshkills Park, north end of North mound, 0.68 km E of intersection of Pearl Harbor Memorial Expressway and Victory Blvd.

**PL** – U.S.A. NEW YORK. RICHMOND CO.: Freshkills Park, north end of North Mound in forest behind Schmul Playground, 98 Pearson St., Staten Island.

**SE** – U.S.A. NEW YORK. RICHMOND CO.: Freshkills Park, southeast end of North mound, 1.56 km SE of intersection of Pearl Harbor Memorial Expressway and Victory Blvd.; Freshkills Park, southeast end of North Mound, north of bridge, on west side of river, along trail at base of mound.

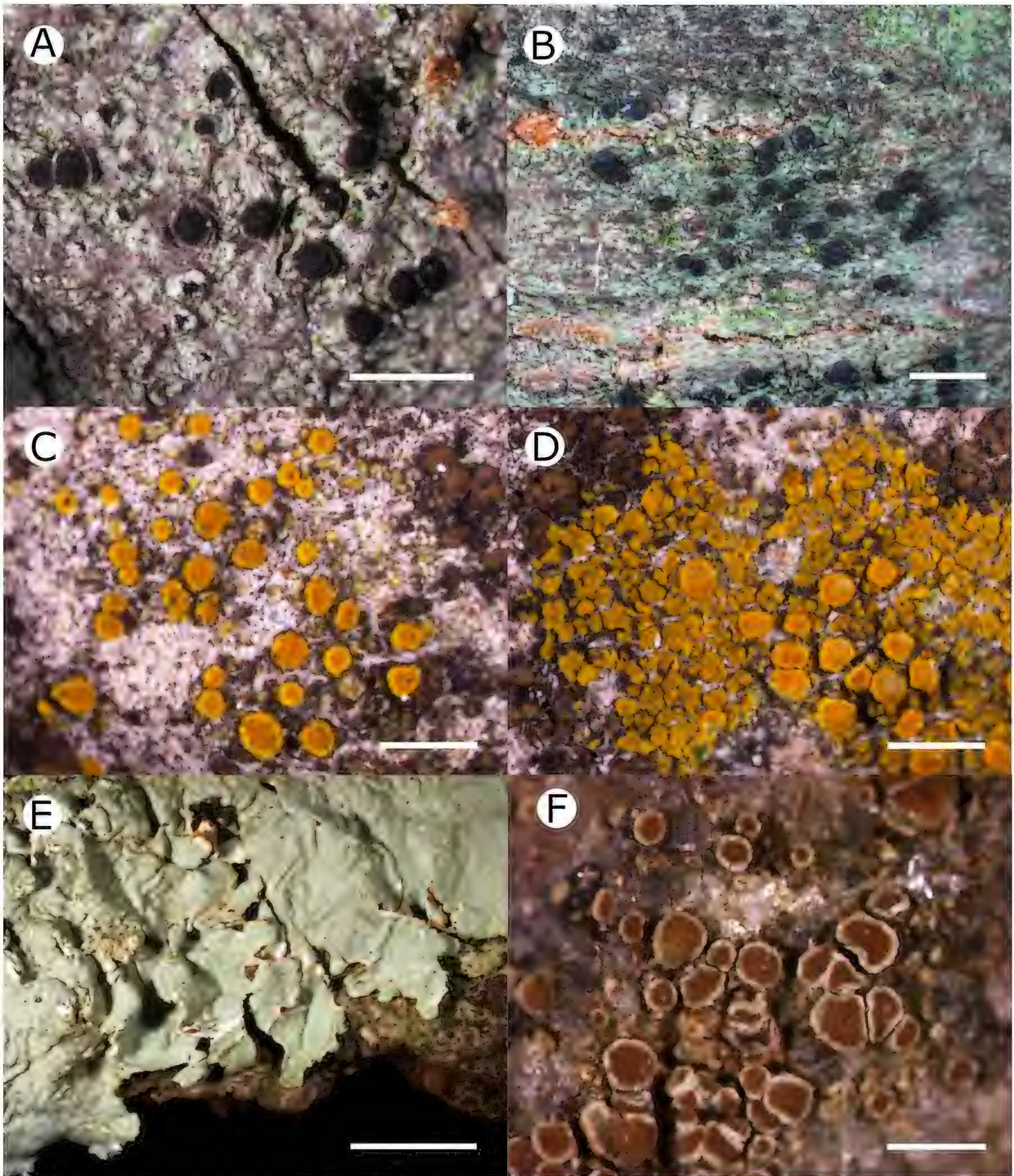
*Amandinea milliaria* (Tuck.) P.F. May & Sheard

*Specimens examined* – **NM**, on *Acer*, 26.x.2015, J.L. Allen 4480 (NY), on *Robinia pseudoacacia*, J.L. Allen 4482 (NY).



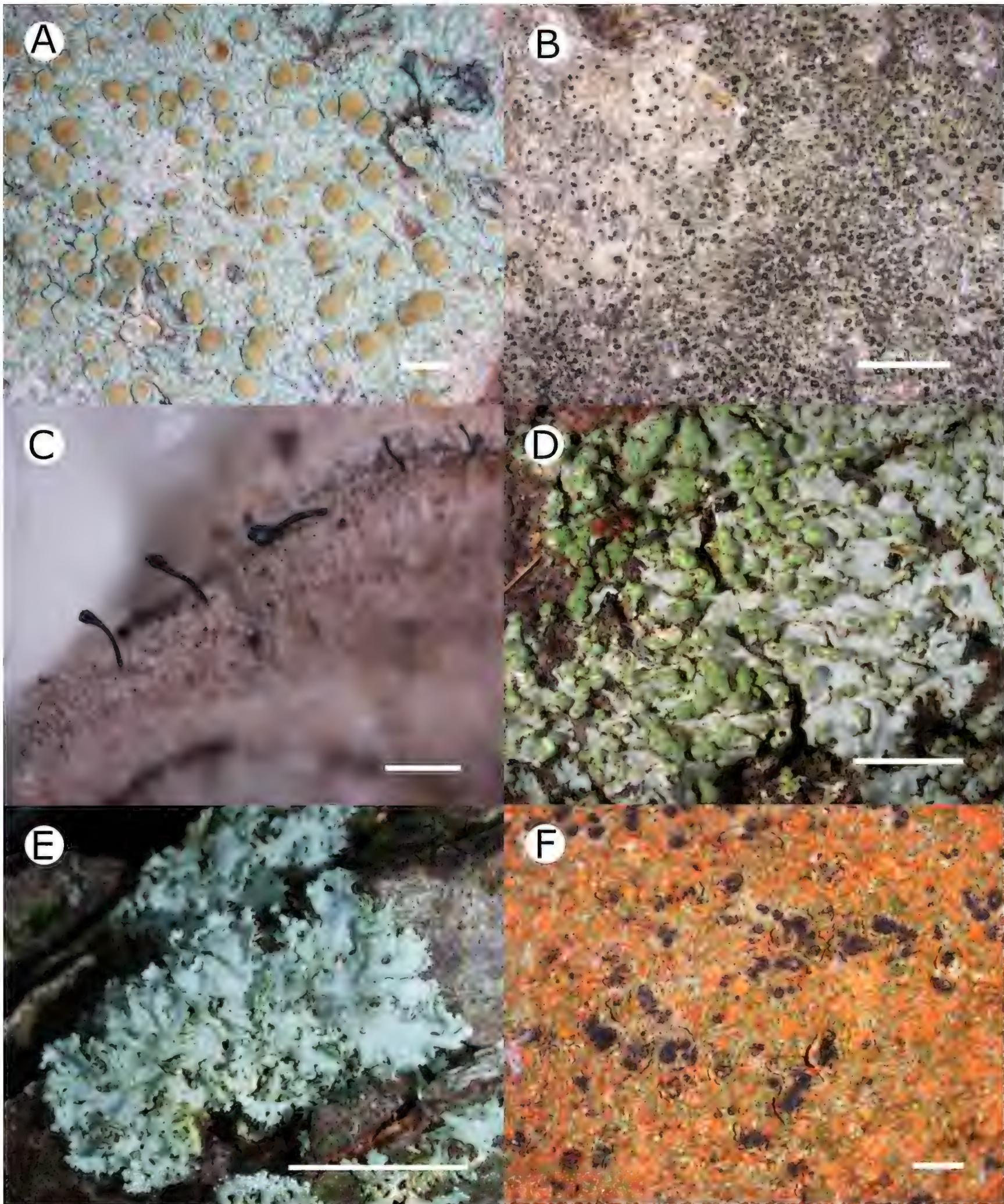
- Amandinea polyspora* (Willey) E. Lay & P.F. May  
*Specimens examined* – **NM**, on *Prunus serotina*, J.L. Allen 4486 (NY); **PL**, on *Prunus*, N.M. Howe 378 (NY), N.M. Howe 382 (NY), N.M. Howe 436 (NY).
- Anisomeridium* sp.  
*Specimen examined* – **PL**, on rock, N.M. Howe 376 (NY).  
 NOTE. – Specimen too poorly developed to identify to species.
- Caloplaca feracissima* H. Magn.  
*Specimen examined* – **NM**, on rock, J.L. Allen 4414 (NY).
- Caloplaca subsoluta* (Nyl.) Zahlbr.  
*Specimen examined* – **NM**, on rock, J.L. Allen 4413 (NY).
- Candelaria concolor* (Dicks.) Arnold  
*Specimen examined* – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4411 (NY).
- Flavoparmelia caperata* (L.) Hale  
*Specimen examined* – **NM**, on *Prunus serotina*, J.L. Allen 4484 (NY).
- Lecanora dispersa* (Pers.) Sommerf.  
*Specimen examined* – **NM**, on rock, J.L. Allen 4415 (NY).
- Lecanora strobilina* Ach.  
*Specimens examined* – **SE** on *Prunus*, J.L. Allen 4491 (NY); **PL**, on *Prunus*, N.M. Howe 377 (NY), N.M. Howe 381 (NY), N.M. Howe 437 (NY).
- Leiomonis erratica* (Körb.) R.C. Harris & Lendemer  
*Specimens examined* – **SE**, on rock fill, J.L. Allen 4416 (NY), N.M. Howe 383 (NY), N.M. Howe 384 (NY).
- Phaeocalicium polyporaeum* (Nyl.) Tibell  
*Specimens examined* – **NM**, on *Trichaptum biforme*, J.L. Allen 4485 (NY); **PL**, on *Trichaptum biforme*, N.L. Howe 380 (NY).
- Phaeophyscia adiastrum* (Essl.) Essl.  
*Specimen examined* – **SE**, on fallen branch, J.L. Allen 4490 (NY).
- Phaeophyscia pusilloides* (Zahlbr.) Essl.  
*Specimen examined* – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4412 (NY).
- Phaeophyscia rubropulchra* (Degel.) Moberg  
*Specimens examined* – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4409 (NY); **PL**, on *Prunus*, N.M. Howe 437 (NY).
- Physcia millegrana* Degel.  
*Specimens examined* – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4410 (NY); **SE**, on *Pinus*, J.L. Allen 4489 (NY), N.M. Howe 438 (NY).
- Physciella chloantha* (Ach.) Essl.  
*Specimen examined* – **SE**, on *Robinia pseudoacacia*, J.L. Allen 4488 (NY).
- Pyrrhospora varians* (Ach.) R.C. Harris  
*Specimens examined* – **NM**, on *Robinia pseudoacacia*, J.L. Allen 4483 (NY); **PL**, on *Prunus*, N.M. Howe 379 (NY).
- Verrucaria* cf. *elaeina* Borrer  
*Specimen examined* – **NM**, on brick, J.L. Allen 4481 (NY).  
 NOTE. – This specimen was identified by R.C. Harris and though this specimen is most similar to *V. elaeina* it doesn't exactly fit the current circumscription of this species (Orange 2000). However, there is no described species to which it seems to be more similar.





**Figure 2.** Selected lichens of Freshkills Park, (scale = 1mm unless otherwise noted). A. *Amandinea milliaria* (Allen 4482, NY). B. *Amandinea polyspora* (Allen 4486, NY). C. *Caloplaca feracissima* (Allen 4413, NY). D. *Caloplaca subsoluta* (Allen 4414, NY). E. *Flavoparmelia caperata* (Allen 4484, NY) (scale = 5mm). F. *Lecanora dispersa* (Allen 4415, NY).





**Figure 3.** Selected lichens of Freshkills Park, (scale = 1mm unless otherwise noted). A. *Lecanora strobilina* (Allen 4491, NY). B. *Leimonis erratica*, (Allen 4416, NY) (scale = 5mm). C. *Phaeocalicium polyporaeum* (Allen 4490, NY). D. *Phaeophyscia adiastrum* (Allen 4490, NY) (scale = 5mm). E. *Physcia millegrana* (Allen 4489, NY) (scale = 5mm). F. *Verrucaria* cf. *elaeina* (Allen 4481, NY).



# The Calicioids of Newfoundland, Canada

RICHARD TROY MCMULLIN<sup>1</sup> AND ANDRÉ ARSENAULT<sup>2</sup>

**ABSTRACT.** – Eight mature forests throughout the Island of Newfoundland in Canada were surveyed for lichenized and non-lichenized calicioid fungi. Thirty-two species were discovered, which increases the number of calicioids known from the island to 34. Twenty-two species are reported for the first time in the province of Newfoundland and Labrador: *Calicium glaucellum*, *C. lenticulare*, *Chaenotheca balsamconensis*, *C. chrysocephala*, *C. gracilentia*, *C. gracillima*, *C. laevigata*, *C. trichialis*, *C. xyloxena*, *Chaenothecopsis consociata*, *C. debilis*, *C. marcineae*, *C. nana*, *C. pusiola*, *C. savonica*, *C. viridireagens*, *Microcalicium conversum*, *M. disseminatum*, *Phaeocalicium compressulum*, *P. matthewsianum*, *Stenocybe flexuosa*, and *S. pullatula*. Additional calicioid species are expected to occur in Newfoundland as many ecoregions and habitats remain unexplored for these taxa.

**KEYWORDS.** – Caliciales, Coniocybaceae, Microcaliciaceae, Mycocaliciaceae Physciaceae, Atlantic Canada.

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## INTRODUCTION

Calicioids are lichenized and nonlichenized fungi that have a mazaedium (Tibell 1996, 1999). Most calicioids are crustose in growth form and produce small pin-like fruiting bodies that are <2 mm tall (these reproductive structures have led them to be known vernacularly as stubble lichens). A considerably smaller number of species are fruticose in growth form (Selva 2013, Tibell 1999). For example, in the Acadian Forest of eastern North America only two calicioids are fruticose, *Sphaerophorus fragilis* (L.) Pers. and *S. globosus* (Huds.) Vain. (Selva 2014). The crustose calicioids are easily overlooked because they are inconspicuous and many species colonize substrates and microhabitats that are often not inhabited by other lichen species. Consequently, these habitats are often not examined by lichenologists (Selva 2013). Calicioids may also be overlooked because many species only tend to occur in old-growth forests with a high diversity of microhabitats (Tibell 1992, Selva 2003, McMullin et al. 2008, Lõhmus & Lõhmus 2011), which are ecosystems that are increasingly uncommon in areas of the world (Rudela et al. 2005, Henry & Quinby 2010, McMullin et al. 2008).

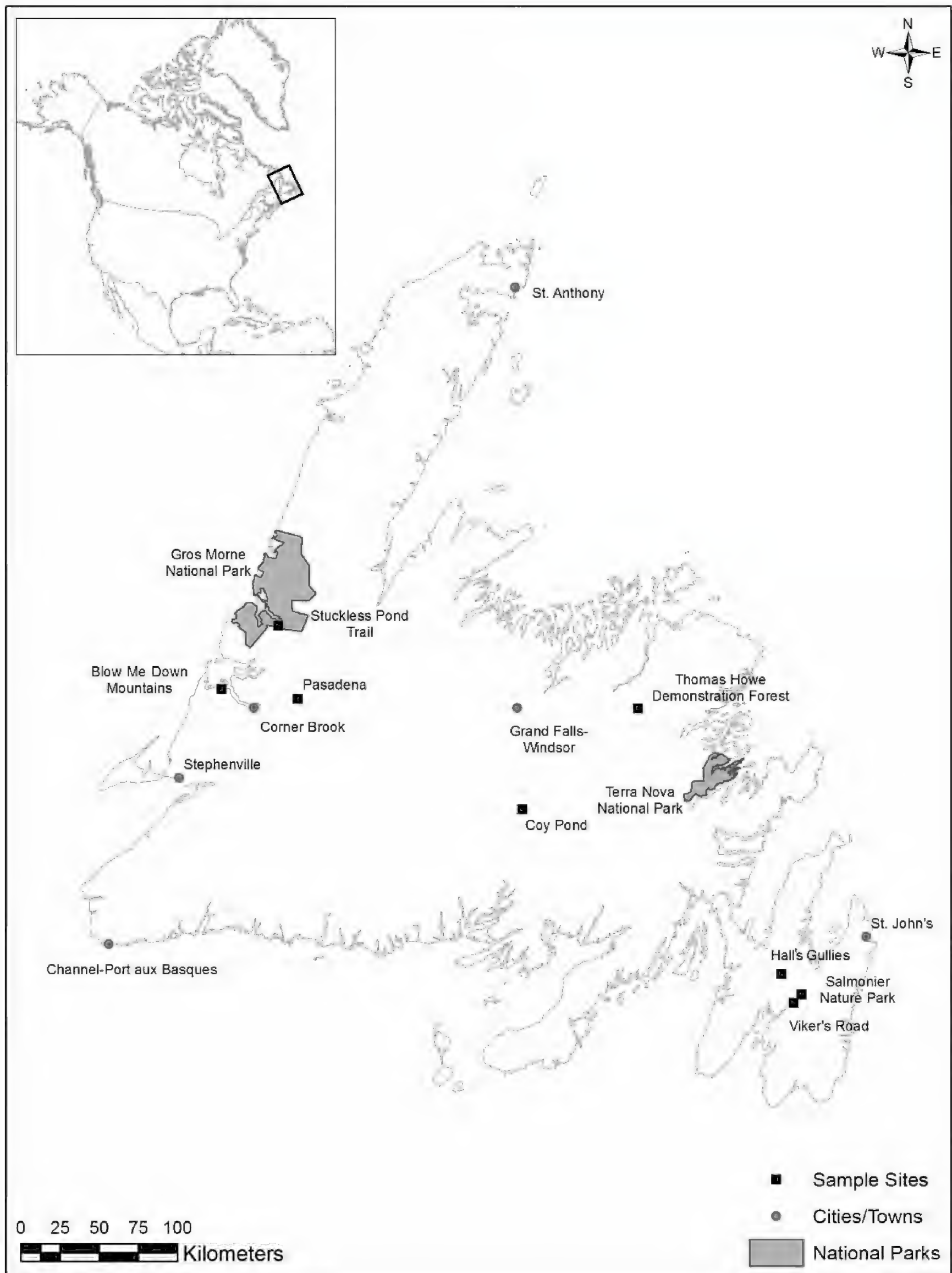
In Newfoundland, Canada, the lichen biota has been well studied compared to other parts of Canada, e.g., Eckfeldt (1895), Arnold (1899), Macoun (1902), Ahti (1983), Thomson (1984, 1997), Yetman (1999), Deduke & Piercey-Normore (2013), Piercey-Normore (2013), Deduke et al. (2014), McCarthy et al. (2015). There appears to be a knowledge gap, however, for the calicioids in this region. Prior to our study, twelve calicioid species were known from Newfoundland, which is conspicuously fewer than the 89 species known from the Acadian Forest (Selva 2014) and the 40 species known from the nearby Parc national de la Gaspésie in eastern Québec (McMullin unpublished data). The aim of our study was to better understand the calicioid biota in Newfoundland by surveying mature and old-growth forests throughout the region.

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**Figure 1.** Location of the eight study sites surveyed throughout Newfoundland.

The vegetation of the Island of Newfoundland (106,000 km<sup>2</sup>) is a unique type of boreal ecosystem shaped by highly variable geology and climate (Damman 1965). Forests dominated by conifers represent about 56% of the vegetation and are naturally fragmented by heathlands (19%), peatlands (14%), and water (10%) (Meades 2008). *Abies balsamea* (balsam fir), and *Picea mariana* (black spruce) dominate the majority of the forested landscapes and often occur in mixtures with other species of coniferous and deciduous trees. The island has nine ecoregions, which represent the dominant biogeoclimatic features (Damman 1983). In this study, we sampled in four ecoregions (Fig.1) including: the Avalon Forest ecoregion located in the middle of the Avalon Peninsula (Hall's Gullies, Salmonier Nature Park, Viker's Road), the Central Newfoundland Forest ecoregion (Thomas Howe Demonstration Forest), Maritime Barrens ecoregion (Coy Pond), and the Western Newfoundland Forest ecoregion (Pasadena watershed, Stuckless Pond Trail, and Blow Me Down Mountains). The Central Newfoundland Forest and Maritime Barrens ecoregions have the most continental climate while the other two ecoregions have strong oceanic influences (Damman 1983). The dominant forest disturbances are defoliating insect outbreaks (e.g., eastern spruce budworm and hemlock looper), which regularly produce deadwood habitat (Arsenault et al. submitted). Fire has played a role in shaping some of the forests especially in the Central Newfoundland Forest and Maritime Barrens ecoregions, but it is considered much less frequent than in boreal forests on the mainland (Berry et al. 2015).

## MATERIALS AND METHODS

### Field Sampling

We examined eight mature and old-growth forests, with some younger and disturbed patches, throughout the Island of Newfoundland between October 5 and November 4, 2015. Our site surveys followed the Floristic Habitat Sampling method described by Newmaster et al. (2005). Those authors showed that sampling throughout a study site is more effective for capturing cryptogam diversity than the use of smaller representative plots. Selva (1999, 2003) referred to this method as an 'intelligent meander' as it allowed more time to be spent in microhabitats that are likely to be colonized by calicioids than those that are not.

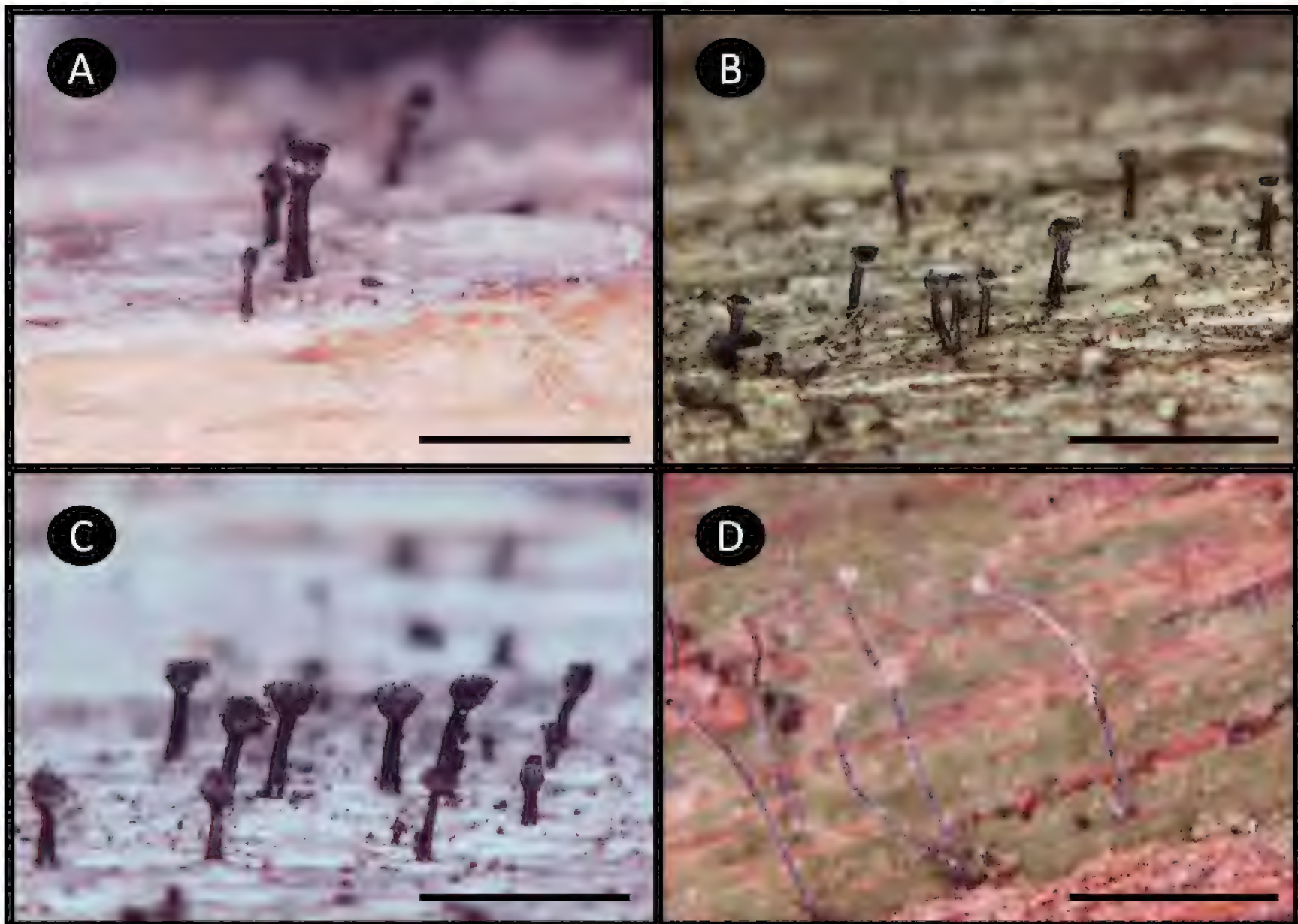
### Identification

We examined external morphology using a Leica S8AP0 stereo microscope. Using a Leica DME compound microscope, we studied internal morphology and chemical reactions with 50% nitric acid, 10% and 20% potassium hydroxide, and Lugol's iodine following Brodo et al. (2001). Specimens were deposited in the Canadian Museum of Nature (CANL) in Gatineau, Québec and at the Canadian Forest Service Herbarium (CDFN) in Corner Brook, Newfoundland and Labrador.

## RESULTS

We discovered 32 species in nine genera throughout the eight forests we sampled. Sixteen (16) species were lichenized (the calicioid lichens) and 16 were not (the calicioid fungi). Based on an up-to-date but heretofore unpublished lichen checklist for Newfoundland and Labrador (John McCarthy, Stephen Clayden, and Teuvo Ahti, unpublished data) and a literature review (citations for species previously reported from Newfoundland are listed in the annotated list below) twenty-two species are reported here for the first time from the Province of Newfoundland and Labrador: *Calicium glaucellum* (Fig. 2a), *C. lenticulare* (Fig. 2b), *Chaenotheca balsamconensis*, *C. chrysocephala*, *C. gracilentia* (Fig. 2d), *C. gracillima*, *C. laevigata*, *C. trichialis*, *C. xyloxena*, *Chaenothecopsis consociata*, *C. debilis*, *C. marcineae*, *C. nana*, *C. pusiola*, *C. savonica*, *C. viridireagens*, *Microcalicium conversum*, *M. disseminatum*, *Phaeocalicium compressulum*, *P. matthewsianum*, *Stenocybe flexuosa*, and *S. pullatula*. The sites with the greatest number of calicioid species were Hall's Gullies (18 species), Stuckless Pond Trail in Gros Morne National Park (11 species), and the Pasadena watershed (11 species). An annotated checklist of the calicioids of Newfoundland is presented below. We also provide a key to the species to facilitate further study of these organisms in the region.





**Figure 2.** Selected lichenized calicioids collected in Newfoundland. A, *Calicium glaucellum* from Gros Morne National Park (McMullin 16599, CANL). B, *Calicium lenticulare* from Hall's Gullies (McMullin 16653, CANL). C, *Calicium abietinum* from Salmonier Nature Park (McMullin 16100, CANL). D, *Chaenotheca gracilentia* from the Pasadena watershed (McMullin 16633, CANL). Scales = 2.5 mm in D, 1.6 mm in B, 1.0 mm in C, and 0.9 mm in A.

#### ANNOTATED LIST OF SPECIES

The following list is arranged alphabetically by genus and species. New records for Newfoundland and Labrador are preceded by an asterisk (\*). Nonlichenized species are preceded by a dagger (†). Nomenclature follows Esslinger (2015). Authorities follow Brummitt and Powell (1992). Newfoundland and Labrador census divisions follow McManus et al. (1991).

#### *Calicium abietinum* Pers.

#### FIGURE 2C.

NOTE. – Previously reported in Newfoundland by Thomson (1997).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin* 16291, 16296, 16297, 16300, 16304, 16306, 16315, 16317, 16591 (all CDFN, [collected by A. Arsenault]); Avalon Peninsula, E of Salmonier River, forests off Viker's Rd., 25.x.2015, lignicolous on a snag, *R.T. McMullin* 16898 (CANL); Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 14.x.2015, lignicolous on a snag, *R.T. McMullin* 16100 (CANL). DIVISION 5: Corner Brook region, Blow Me Down Mountains, Nature Trail, ~100 m S of Main Rd., 03.xi.2015, lignicolous on a snag, *R.T. McMullin* 16917 (CANL); Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin* 16598 (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *McMullin* 16937, 16938, 16939 (all CDFN [collected by A. Arsenault]); Gander, Thomas Howe Demonstration Forest, 30.x.2015, lignicolous on a snag, *R.T. McMullin* 16618 (CANL).

\**Calicium glaucellum* Ach.

**FIGURE 2A.**

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16599* (CANL).

\**Calicium lenticulare* Ach.

**FIGURE 2B.**

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16303, 16312, 16316, 16932, 16933* (all CDFN [collected by A. Arsenault]); 28.x.2015, *R.T. McMullin 16653, 16669* (both CANL); Avalon Peninsula, Salmonier Nature Park, along boardwalk near the great-horned owl enclosure, 10.x.2015, lignicolous on a snag, *R.T. McMullin 16021* (CANL); Salmonier Nature Park, along path to Butler's Pool, 19.x.2015, lignicolous on a snag, *R.T. McMullin 16084* (CANL).

*Calicium salicinum* Pers.

NOTE. – Previously reported from Newfoundland by Macoun (1902).

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16776* (CANL).

*Calicium trabinellum* (Ach.) Ach.

NOTE. – Previously reported from Newfoundland by Macoun (1902) and Thomson (1997).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16314* (CDFN [collected by A. Arsenault]). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16597* (CANL); Corner Brook region, Blow Me Down Mountains, Nature Trail, ~100 m S of Main Rd., 03.xi.2015, lignicolous (snag), *R.T. McMullin 16913* (CANL).

\**Chaenotheca balsamconensis* J.L. Allen & McMullin

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Salmonier Nature Park, along boardwalk near the woodland caribou enclosure, 10.x.2015, fungicolous on *Trichaptum abietinum*, *R.T. McMullin 16030* (CANL); Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Road, 29.x.2015, fungicolous on *T. abietinum*, *R.T. McMullin 16823* (CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, fungicolous on *T. abietinum*, *R.T. McMullin 16612* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, fungicolous on *T. abietinum*, *R.T. McMullin 16943* (CDFN [collected by A. Arsenault]).

*Chaenotheca brunneola* (Ach.) Müll. Arg.

NOTE. – Previously reported from Newfoundland by Deduke et al. (2014).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16277, 16281, 16282, 16283, 16284, 16285, 16286, 16287, 16289, 16290, 16590, 16934* (all CDFN [collected by A. Arsenault]); 28.x.2015, *R.T. McMullin 16667* (CANL), 29.x.2015, *R.T. McMullin 16825* (CANL); Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 14.x.2015, lignicolous on a snag, *R.T. McMullin 16076* (CANL). DIVISION 5: public forests ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16637* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *R.T. McMullin 16940, 16941, 16942* (all CDFN [collected by A. Arsenault]).

\**Chaenotheca chrysocephala* (Ach.) Th. Fr.

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, E of Salmonier River, forests off Viker's Rd., 25.x.2015, lignicolous on a snag, *R.T. McMullin 16897* (CANL); Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous on an *Abies balsamea* snag, *R.T. McMullin 16930* (CANL [collected by A. Arsenault]).





**Figure 3.** Habitat and niche of *Chaenotheca furfuracea* (inset), which grows on the soil and rootlets of upturned trees (photo from Blow Me Down Trails; *Arsenault 417*, CDFN). Scale = 2.2 mm.

*Chaenotheca furfuracea* (L.) Tibell

**FIGURE 3.**

NOTE. – Previously reported from Newfoundland by Macoun (1902) and Thomson (1997) as *Coniocybe furfuracea* (L.) Pers.

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Corner Brook region, Blow Me Down Trails, x.2014, on the soil and rootlets of an upturned tree, *A. Arsenault 417* (CDFN); Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag in humid conditions, *R.T. McMullin 16638* (CANL).

\**Chaenotheca gracilenta* (Ach.) Mattson & Middelb.

**FIGURE 2D.**

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous in a cavernous hollow of a live *Betula alleghaniensis*, *R.T. McMullin 16633* (CANL).

\**Chaenotheca gracillima* (Vain.) Tibell

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 28.x.2015, lignicolous, *R.T. McMullin 16670* (CANL), 29.x.2015, lignicolous on a snag, *R.T. McMullin 16765* (CANL).

\**Chaenotheca laevigata* Nád. v.

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lignicolous on a snag, *R.T. McMullin 16826* (CANL). DIVISION 5: public forests ~1.5 km E of Pasadena, 02.xi.2015, lignicolous, *R.T. McMullin 16639* (CANL).

\**Chaenotheca trichialis* (Ach.) Th. Fr.

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lignicolous on a snag, *R.T. McMullin 16766* (CANL).

\**Chaenotheca xyloxena* Nádv.

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: public forests ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on *Betula alleghaniensis*, *R.T. McMullin 16632* (CANL), lignicolous on a snag, *R.T. McMullin 16867* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *McMullin 16945* (CDFN [collected by A. Arsenault]).

\*†*Chaenothecopsis consociata* (Nádv.) A.F.W. Schmidt

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lichenicolous on *Chaenotheca chrysocephala*, *R.T. McMullin 16929* (CANL [collected by A. Arsenault]).

\*†*Chaenothecopsis debilis* (Turner & Borrer ex Sm.) Tibell

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16606* (CANL).

\*†*Chaenothecopsis marcineae* Selva

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, resinicolous on *Picea mariana*, *R.T. McMullin 16593* (CANL).

\*†*Chaenothecopsis nana* Tibell

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena, public forests on the E edge of the town, 02.xi.2015, corticolous in a hollow of a live *Betula alleghaniensis* trunk, *R.T. McMullin 16625* (CANL).

\*†*Chaenothecopsis pusiola* (Ach.) Vain.

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 28.x.2015, lignicolous, *McMullin 16646*, *16671* (both CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16596* (CANL).

\*†*Chaenothecopsis savonica* (Räsänen) Tibell

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lignicolous on a snag, *R.T. McMullin 16707* (CANL).

\*†*Chaenothecopsis viridireagens* (Nádv.) A.F.W. Schmidt

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16301* (CANL [collected by A. Arsenault]).

\*†*Microcalicium conversum* Tibell

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, corticolous on *Picea mariana*, *R.T. McMullin 16595* (CANL).

\*†*Microcalicium disseminatum* (Ach.) Vain.

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16640* (CANL).

†*Mycocalicium subtile* (Pers.) Szatala

NOTE. – Previously reported either from Newfoundland or Labrador by Eckfeldt (1895) as *Calicium subtile* Fr. and from Newfoundland by Thomson (1997).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, lignicolous, *R.T. McMullin 16278*, *16279*, *16288*, *16294*, *16295*, *16299*, *16308*, *16309*, *16311*, *16935*, *16936* (all CDFN [collected by A. Arsenault]),



28.x.2015, *R.T. McMullin 16645, 16647, 16668* (all CANL), 29.x.2015, lignicolous on a snag, *R.T. McMullin 16710* (CANL); Avalon Peninsula, Salmonier Nature Park, between Murphy's Falls and the Three Rivers, 19.x.2015, lignicolous on a snag, *R.T. McMullin 16083* (CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, lignicolous, *R.T. McMullin 16594* (CANL). Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, lignicolous on a snag, *R.T. McMullin 16635* (CANL). DIVISION 6: Coy Pond, ~10 km W of Hwy 360, xi.2015, lignicolous, *R.T. McMullin 16946* (CDFN [collected by A. Arsenault]).

\*†*Phaeocalicium compressulum* (Nyl. ex Szatala) A.F.W. Schmidt

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, corticolous on *Alnus viridis* ssp. *crispa*, *R.T. McMullin 16761* (CANL); Avalon Peninsula, Salmonier Nature Park, along the trail between the visitor centre and the administration building, 10.x.2015, corticolous on *A. viridis* ssp. *crispa*, *R.T. McMullin 16039* (CANL).

\*†*Phaeocalicium matthewsianum* Selva & Tibell

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, corticolous on *Betula alleghaniensis*, *R.T. McMullin 16734* (CANL); Avalon Peninsula, Salmonier Nature Park, along the trail between the visitor centre and the administration building, 10.x.2015, corticolous on *B. alleghaniensis*, *R.T. McMullin 16040* (CANL). DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, corticolous on a *Betula* sp., *R.T. McMullin 16601* (CANL). DIVISION 6: Gander, Thomas Howe Demonstration Forest, 30.x.2015, corticolous on a *Betula* sp., *R.T. McMullin 16622* (CANL).

*Sphaerophorus fragilis* (L.) Pers.

NOTE. – Previously reported from either Newfoundland and Labrador by Eckfeldt (1895) and from Newfoundland by Ahti (1983) and McCarthy et al. (2015).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 11.x.2015, saxicolous, *R.T. McMullin 16062* (CANL); Avalon Peninsula, Salmonier Nature Park, E edge of the park, near MacKay's Lookout, 20.x.2015, saxicolous, *R.T. McMullin 16114, 16182* (both CANL).

*Sphaerophorus globosus* (Huds.) Vain.

NOTE. – Previously reported from either Newfoundland or Labrador by Eckfeldt (1895) as *Sphaerophorus coralloides* Pers. and from Newfoundland by Ahti (1983) and McCarthy et al. (2015).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., x.2015, *R.T. McMullin 16338, 16349, 16396, 16405, 16414, 16446, 16484, 16489, 16510, 16517, 16551, 16567, 16575* (all CDFN; collected by A. Arsenault), 29.x.2015, corticolous on *Betula alleghaniensis* and *Picea mariana*, *R.T. McMullin 16714* (CANL), *R.T. McMullin 16769* (CANL), 28.x.2015, corticolous on *Abies balsamea*, *R.T. McMullin 16786* (CANL); Avalon Peninsula, Salmonier Nature Park, along path to Butler's Pool, 19.x.2015, corticolous on *Betula alleghaniensis*, *R.T. McMullin 16212* (CANL); Salmonier Nature Park, along boardwalk near the great-horned owl enclosure, 10.x.2015, corticolous on *Picea mariana*, *R.T. McMullin 16015* (CANL).

†*Sphinctrina turbinata* (Pers. : Fr.) De Not.

NOTE. – Previously reported from either Newfoundland or Labrador by Eckfeldt (1895) as *Calicium turbinatum* Pers. and from Newfoundland by Deduke et al. (2014).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 1: Avalon Peninsula, Hall's Gullies, NW of Fox Marsh Rd., 29.x.2015, lichenicolous on *Pertusaria* sp. on a *Betula alleghaniensis* snag, *R.T. McMullin 16756* (CANL); Avalon Peninsula, East of Salmonier River, forests off Viker's Rd., 25.x.2015, lichenicolous on *Pertusaria* sp. on *Betula alleghaniensis*, *R.T. McMullin 16864* (CANL).

\*†*Stenocybe flexuosa* Selva & Tibell

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, corticolous on a *Picea* sp., *R.T. McMullin 16636* (CANL).

†*Stenocybe major* Nyl. ex Körb.

NOTE. – Previously reported from Newfoundland by Yetman (1999).

*Specimens examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 5: Gros Morne National Park, Stuckless Pond Trail, 01.xi.2015, corticolous on *Abies balsamea*, R.T. McMullin 16600, 16609, 16611 (all CANL); Pasadena watershed, ~1.5 km E of Pasadena, 02.xi.2015, corticolous on *Abies balsamea*, R.T. McMullin 16644 (CANL).

\*†*Stenocybe pullatula* (Ach.) Stein

*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR.** DIVISION 6: Gander, Thomas Howe Demonstration Forest, 30.x.2015, corticolous on *Alnus incana* ssp. *rugosa*, R.T. McMullin 16623 (CANL).

## KEY TO THE CALICIOIDS OF NEWFOUNDLAND AND LABRADOR

This key requires the determination of three algal genera: *Dictyochloropsis* (cells globose to subglobose, <20 µm in diameter), *Stichococcus* (cells cylindrical to ellipsoidal, <8(–12) µm long), and trebouxoid (cells globose to subglobose, <14 µm in diameter).

- 1a. Thallus fruticose .....2
  - 2a. All branches with a somewhat consistent diameter; medulla IKI-; on soil and rock .....*Sphaerophorus fragilis*
  - 2b. Main branches with a larger diameter than the side branches; medulla IKI+ blue; on rock, soil, and trees.....*Sphaerophorus globosus*
- 1b. Thallus crustose.....3
  - 3a. Ascospores 1-celled .....4
    - 4a. Mazaedia pale-brown, grey-brown, or brown; ascospores globose to ellipsoidal; photobiont present (lichenized), either *Dictyochloropsis*, *Stichococcus*, or trebouxoid..... 5 (*Chaenotheca*)
    - 5a. Apothecia (stalks and capitula) with yellow pruina .....6
      - 6a. Photobiont *Stichococcus*; thallus granular, yellow-green; apothecia usually fully covered by yellow pruina, pruina occasionally absent at the base; capitulum globose; excipula poorly developed; in moist and shaded habitats, frequently on the soil and rootlets of upturned trees ..... *Chaenotheca furfuracea* (Fig. 3)
      - 6b. Photobiont trebouxoid; thallus bright yellow to yellow-green or immersed; pruina usually only on the upper portions of the apothecia; capitula obovoid; excipula well developed; corticolous and lignicolous.....7
        - 7a. Thallus bright yellow to green-yellow (vulpinic acid), granular to verrucose, continuous or scattered; corticolous and lignicolous ..... *Chaenotheca chrysocephala*
        - 7b. Thallus immersed; usually lignicolous ..... *Chaenotheca laevigata*
    - 5a. Apothecia epruinose or with brown, red-brown, grey-brown, or white pruina .....8
      - 8a. Apothecia epruinose .....9
        - 9a. On *Trichaptum abietinum*; thallus immersed, rarely granular; photobiont trebouxoid ..... *Chaenotheca balsamconensis*
        - 9b. Corticolous or lignicolous; thallus immersed or granular; photobiont *Dictyochloropsis* or *Stichococcus* .....10
          - 10a. Thallus usually immersed (on its typical substrate, lignum), occasionally granular and grey to green-grey (usually only when corticolous); photobiont *Dictyochloropsis* ..... *Chaenotheca brunneola*
          - 10b. Thallus usually granular, grey to green-grey; photobiont *Stichococcus* .....*Chaenotheca trichialis*
      - 8b. Apothecia with brown, red-brown, grey-brown, or white pruina .....11
        - 11a. Apothecia flexuous (<2.5 mm tall), with red-brown to brown pruina on the upper portions; capitula globose to subglobose; photobiont *Stichococcus*; corticolous and lignicolous in humid and shaded conditions ..... *Chaenotheca gracillima*
        - 11b. Pruina white or grey-brown; apothecia flexuous or straight .....12



- 12a.** Photobiont *Stichococcus*; apothecia flexuous, <3.5 mm tall, with grey to grey-brown pruina, particularly on the upper portions; capitula globose; excipula poorly-developed; mazaedia grey-brown; in shaded and humid conditions, usually in the hollows of old snags ..... *Chaenotheca gracilentia* (Fig. 2D)
- 12b.** Photobiont *Stichococcus* or *Dictyochloropsis*; apothecia straight, <2 mm tall; excipula well developed; corticolous and lignicolous ..... **13**
- 13a.** Photobiont *Dictyochloropsis*; apothecia lacking pruina, but they can appear pruinose because of pale hyphae on the low part of the capitula; thallus usually immersed (on its typical substrate, lignum), occasionally granular and grey to green-grey (usually only when corticolous) ..... *Chaenotheca brunneola*
- 13b.** Photobiont *Stichococcus* ..... **14**
- 14a.** Apothecia with faint white pruina on the upper portion, usually epruinose; thallus granular, grey to green-grey ..... *Chaenotheca trichialis*
- 14b.** Apothecia with thick white pruina on the upper portion; thallus immersed ..... *Chaenotheca xyloxena*
- 4b.** Mazaedia dark (blackish); photobiont absent (nonlichenized) ..... **15**
- 15a.** Lichenicolous, on *Pertusaria* spp.; apothecia (stalks and capitulum) short (<0.3 mm tall); capitulum globose or subglobose ..... *Sphinctrina turbinata*
- 15b.** Not on *Pertusaria* spp.; corticolous, lignicolous, or lichenicolous on *Chaenotheca* spp. .... **16**
- 16a.** Mature capitula flat (compressed), fan-shaped; apothecia <0.5 mm tall, KOH+ red enhanced in a wet mount; on *Alnus viridis* ssp. *crispa* ..... *Phaeocalicium compressulum*
- 16b.** Mature capitula lenticular or globose; apothecia KOH-; on other substrates ..... **17**
- 17a.** Mature asci <45 µm long, tips without a narrow channel (best seen in semi-mature asci at 1000x); apothecia <1 mm tall; ascospores brown, prolate-spheroidal (football-shaped), <8.5 µm long, surface smooth; usually lignicolous ..... *Mycocalicium subtile*
- 17b.** Mature asci <55 µm long, tips with a narrow channel; apothecia <1.3 mm tall; ascospores brown to hyaline, ellipsoidal to prolate-spheroidal, <7 µm long, surface ornamented or smooth; corticolous, lignicolous, or lichenicolous on the thallus of *Chaenotheca* spp. .... **18**
- 18a.** Capitula lenticular; ascospores prolate-spheroidal, brown to dark brown, often irregularly-arranged in asci; surface ornamented (rough); apothecia <0.7 mm tall; usually corticolous ..... *Chaenothecopsis nana*
- 18b.** Capitula globose; ascospores ellipsoidal, pale brown to hyaline, regularly-arranged in asci; surface smooth; apothecia <1.3 mm tall; lignicolous in Newfoundland, reported from bark, free living *Trentepohlia*, and the thalli of *Chaenotheca* spp. elsewhere ..... *Chaenothecopsis savonica*
- 3b.** Mature ascospores ≥2-celled ..... **19**
- 19a.** Mazaedia aeruginose (blue-green); apothecia sessile to subsessile; photobiont absent; on free living algae corticolous or lignicolous ..... **20**
- 20a.** Excipula red-brown to brown; ascospores 2-celled ..... *Microcalicium conversum*
- 20b.** Excipula aeruginose; ascospores often 3–4-celled ..... *Microcalicium disseminatum*
- 19b.** Mazaedia blackish; apothecia sessile or stalked ..... **21**
- 21a.** Thallus yellow; apothecia sessile; ascospores 2-celled, brown, ellipsoidal; photobiont trebouxoid; lignicolous ..... *Cyphelium tigillare*
- 21b.** Thallus not yellow, indistinct or shades of green, grey, or white; apothecia stalked ..... **22**
- 22a.** Mature ascospores ≥4-celled; photobiont absent (nonlichenized) ..... **23**
- 23a.** Capitula flat (compressed), fan-shaped; apothecia <0.6 mm tall, KOH+ red enhanced in a wet mount; ascospores 4-celled; only on *Betula* spp. in Newfoundland, also known to rarely occur on *Sorbus* spp. elsewhere ..... *Phaeocalicium matthewsianum*
- 23b.** Capitula not flattened; ascospores ≥(2–)4-celled; on *Abies balsamea*, *Alnus incana* ssp. *rugosa*, or *Picea* spp. .... **24**

- 24a. Apothecia >1.5 mm tall, flexuous; ascospores 4–6-celled, on *Picea* spp. bark ..... *Stenocybe flexuosa*
- 24b. Apothecia <1.5 mm tall, straight; ascospores 2–4-celled, on the bark of *Abies balsamea* or *Alnus incana* ssp. *rugosa* ..... 25
- 25a. Apothecia <1.5 mm tall, ascospores 4-celled, on *Abies balsamea* bark ..... *Stenocybe major*
- 25b. Apothecia <0.5 mm tall, mature ascospores 4-celled, but often only 2-3 celled, on *Alnus incana* ssp. *rugosa* bark ..... *Stenocybe pullatula*
- 22b. Mature ascospores 2-celled; photobiont present or absent ..... 26 (also see lead 25)
- 26a. Photobiont trebouxoid; ascospores brown to dark brown; in a wet mount mature spores mostly outside of asci; corticolous or lignicolous, not lichenicolous. 27 (*Calicium*)
- 27a. Apothecia with yellow pruina on the excipula; usually on lignum, rarely on bark. .... *Calicium trabinellum*
- 27b. Apothecia with white pruina, epruinose, or a brown pruina-like pigment ..... 28
- 28a. Apothecia with white pruina on the excipula; on bark and lignum ..... 29
- 29a. Apothecia IKI+ blue in a wet mount ..... *Calicium lenticulare* (Fig. 2B)
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- 28b. Apothecia epruinose or with a brown pruina-like pigment ..... 30
- 30a. Apothecia epruinose; on lignum ..... *Calicium abietinum* (Fig. 2C)
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- 31a. Thallus usually immersed, if visible then thin and grey-green; mature ascospores <11 µm long; asci cylindrical, >30 µm long ..... *Calicium salicinum*
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- 26b. Photobiont absent; lichenicolous, resinicolous, or lignicolous; ascospores pale brown to brown; in wet mounts mature spores mostly inside of asci 32 (*Chaenothecopsis*)
- 33a. Apothecia pruinose, <0.4 mm tall ..... 34
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- 33b. Apothecia epruinose, <1.2 mm tall ..... 35
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- 35b. Apothecia KOH- or KOH+ red in a wet mount ..... 37
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- 37b. Apothecia <1.1 mm tall, KOH-, but the red hue of the stalk in a wet mount can be enhanced by the addition of KOH; ascospores <9 µm long; on bark and lignum ..... *Chaenothecopsis debilis*

## CONCLUSION

Here we have increased the number of calicioid species known from the Island of Newfoundland from 12 to 34. There are two species that were previously collected that we did not find, *Calicium viride* Pers. (reported as *C. hyprellum* Ach. by Macoun (1902), which we presume to be a lapsus for *C. hyperellum*) and *Chaenothecopsis dibbleandersoniarum* Selva collected at Hall's Gullies on the Avalon



Peninsula during the Tuckerman Workshop in 2007 (*Buck 52424* and *Lendemer 10129*, both NY[n.v.]). Eckfeldt (1895) also reported *Cyphelium tigillare* (Ach.) Ach. (as *Acolium tigillare* (Ach.) DeNot.) from Newfoundland or Labrador, but the location where the voucher was collected was not specified. We expect additional calicioid species will be found in Newfoundland as five of the nine ecoregions on the Island were not visited during our study.

Calicioids are particularly sensitive indicators of forest ecosystem integrity and continuity (Tibell 1992, Selva 2003). As a result, these taxa can be used to help forest managers identify areas of high conservation value and better understand the impact of management strategies (McMullin et al. 2008, 2013; Lõhmus & Lõhmus 2011). The first step in using calicioids to inform management decisions is to develop baseline data as we have done here (Reid & Miller 1989, Environment Canada 1995, Powell et al. 2000). In the future we intend to study habitat requirements for calicioids in Newfoundland and how forest management practices can better incorporate the conservation of these habitats.

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## Studies in Lichens and Lichenicolous Fungi – No. 20: Further notes on species from the eastern North America

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**ABSTRACT.** – *Arthothelium lichenale* is placed in synonymy with *Mycoporum compositum*. The morphological distinctions between *Collema pustulatum* and *Leptogium apalachense* are discussed and the North American distributions of the species are revised. The distribution of *Lecidea roseotincta* in North America is extended to include the central and southern Appalachian Mountains. The distribution of *Lecidella subviridis* is expanded in northeastern North America. *Pyrenula reebiae* is placed in synonymy with *P. leucostoma* and both species are illustrated and discussed. *Pyrenula shirabeicola* is removed from synonymy with *P. pseudobufonia* and both species are illustrated and discussed. The following taxa are newly reported from North America: *Calvitimela cuprea* (Canada, Newfoundland & Labrador), *Hypotrachyna consimilis* (U.S.A., North Carolina), *Schismatomma graphidioides* (U.S.A., Alabama and New Jersey).

**KEYWORDS.** – Biogeography, Collemataceae, North American Checklist, Lecanoraceae, Lecideaceae, Parmeliaceae, Pyrenulaceae, sterile crust.

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### INTRODUCTION

As a result of fieldwork carried out throughout eastern North America, particularly in the southern Appalachian Mountains, we have studied new collections that prompted us to reexamine our understanding of recognized species, their distributions, and ecologies. Routine curation of the herbarium at the New York Botanical Garden led to similar studies, as has the identification of specimens that were newly donated to the herbarium. While such studies typically result in discrete taxonomic or floristic publications, there are often also brief notes that merit publication but are not easily accommodated in a standalone contribution. Here we present a series of notes that fall into the latter category. We hope that these notes will be of use for those working in eastern North America, as well as towards maintaining the Checklist of North American Lichens (Esslinger 2015).

### MATERIALS AND METHODS

#### *Fieldwork and herbarium vouchers*

This study is based largely upon the fieldwork conducted by the authors, together with their colleagues at The New York Botanical Garden (NY), where the majority of specimens examined for this study have been deposited. These data and observations were complemented by reference material already available at NY, and supplemented by loans from DUKE, NYS and TNS. Study of material from H-ACH was also carried out.

#### *Morphological and chemical study*

The morphology of specimens was examined following the techniques of microscopy outlined by Lendemer (2011b). Chemistry was studied with standard spot test reagents (K, C, P and UV) following

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Brodo et al. (2001) and with Thin Layer Chromatography using Solvents A or C and the Peanut Butter Jar method outlined by Lendemer (2011a).

*DNA extraction, amplification, and sequence generation*

Molecular data (one mtSSU and one nrITS sequence) were generated from a voucher of *Lecidea roseotincta*. Subsamples used for DNA extraction were those used in TLC analyses above such that the chemistry and identification of the vouchers had been confirmed. DNA extraction, PCR amplification, and sequence assembly followed the methods of Hodkinson and Lendemer (2012). Distance metrics between the newly generated sequences and those already deposited in GenBank were calculated in PAUP\* 4.0b10 (Swofford 1998).

**NOTE I – ARTHOTHELIUM LICHENALE IS CONSPECIFIC WITH MYCOPORUM COMPOSITUM**

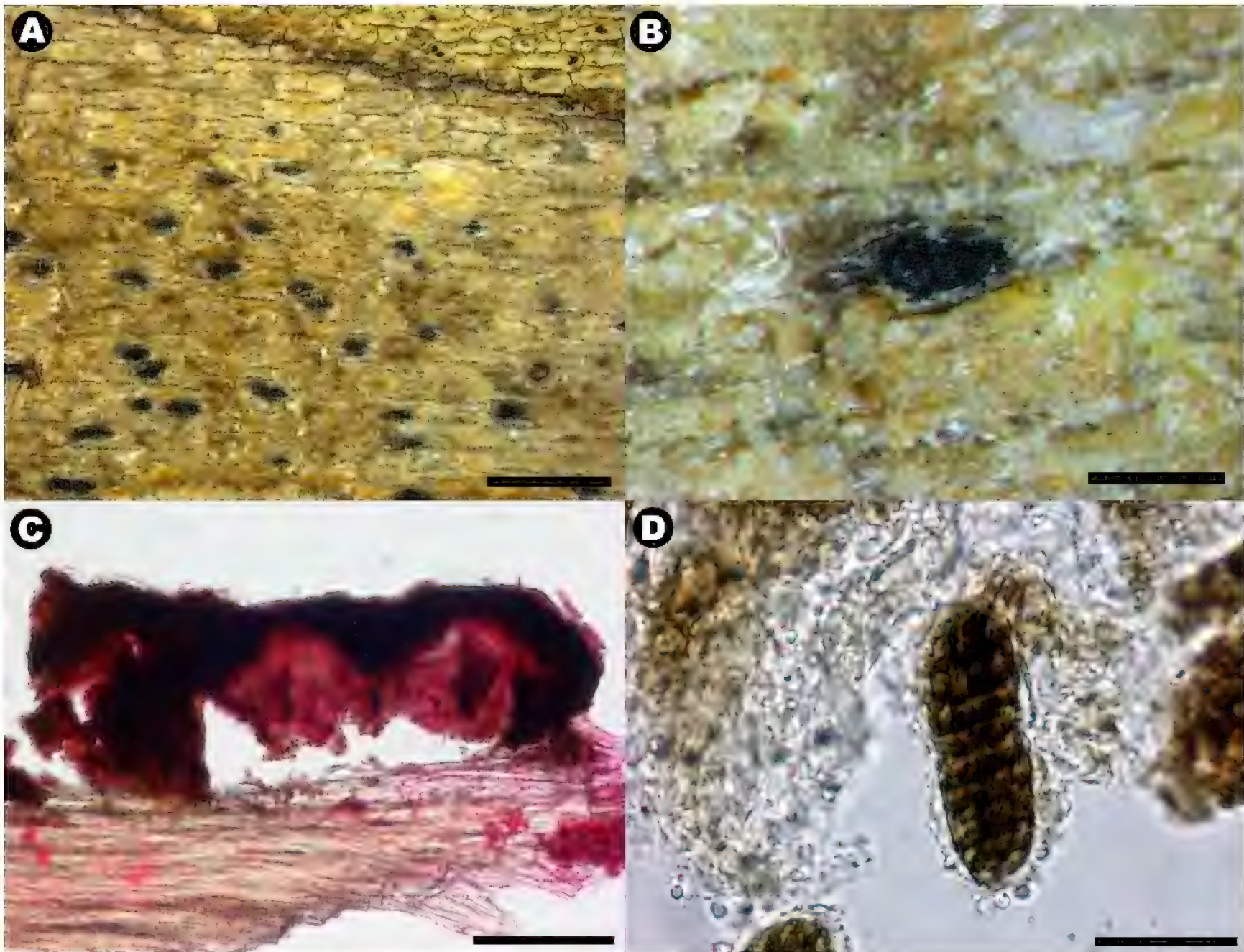
*Mycoporum compositum* (A. Massal.) R.C. Harris in Egan, Bryologist 90(2): 164. 1987.  $\equiv$  *Bottaria composita* A. Massal., Miscell. Lichenol. p. 43. 1856.  $\equiv$  *Pyrenastrum compositum* Hampe nom. nud. in syn. Miscell. Lichenol. p. 43. 1856. **TYPE:** Ad cort. Chinae [Cinchonae] (VER!, holotype).

= *Arthothelium lichenale* (Peck) M.E. Barr [as '*lichenalis*'], in Barr, Rogerson, Smith & Haines, Bull. N.Y. St. Mus. 459: 28. 1986.  $\equiv$  *Sphaeria lichenalis* Peck, Bot. Gaz. 5:36. 1880.  $\equiv$  *Pleospora lichenalis* (Peck) Sacc., Syll. Fung 2: 258. 1883. **TYPE: U.S.A. VERMONT:** sine loc., sine date, on bark of *Betula*, C.G. Pringle 381 (NYS-f1703!, lectotype, **designated here**).

Discussion. – While reviewing some fungal literature we recently came across *Arthothelium lichenale*, a name not presently included on the North American checklist (Esslinger 2015). We borrowed the type material from NYS and found that it was moribund but nonetheless readily identifiable as *Mycoporum compositum* based on the presence of multilocular perithecioid ascomata and muriform ascospores (Figure 1). Interestingly Peck (1880) not only noted the perithecial nature of the ascomata but also that they were multilocular: “sometimes two or three [perithecia] are seriatly crowded or confluent”. Barr et al. (1986) reported ascospores  $29.5\text{--}33 \times 10\text{--}12 \mu\text{m}$  in size, and these were likely somewhat immature. The few ascospores that we measured, although moribund, were larger ( $35.0\text{--}41.0 \times 12.0\text{--}14.5 \mu\text{m}$ ) than those reported by Barr et al. (1986) and well within the accepted range for *M. compositum* ( $30\text{--}38 (-43) \times 12\text{--}17(-18) \mu\text{m}$  *fide* Harris (1995)). The name is placed in synonymy with *M. compositum* here.

Selected additional specimens of *Mycoporum compositum* examined. – **CANADA. NOVA SCOTIA.** QUEENS CO.: Kejimikujik National Park, along E shore of Kejimikujik Lake near inlet from Grafton Lake, 9.v.1999, on *Acer*, R.C. Harris 43109 (NY). **U.S.A. FLORIDA.** FRANKLIN CO.: Apalachicola National Forest, FL65 4.8 mi N of Sumatra, 3.v.1990, on bark, R.C. Harris 25019 (NY). GILCHRIST CO.: Waccasassa Flats, along CR232 ~3 mi E of US129, 5.xii.1993, on *Ilex*, R.C. Harris 31705 (NY). OKALOOSA CO.: 1.2 mi W of FL85 on Antioch Rd./CR4, 5.v.1990, on bark, W.R. Buck 17912 (NY). **MAINE.** KENNEBEC CO.: Mud Pond, ~3 mi SW of Litchfield, 19.ix.1987, on *Acer*, R.C. Harris 20894 (NY). **MASSACHUSETTS.** WORCESTER CO.: Spencer, 1884, on bark, G.E. Stone s.n. (NY). **NEW YORK.** WASHINGTON CO.: Shushan, 12.v.1906, on bark, F. Dobbin s.n. (NY). **NORTH CAROLINA.** GRAHAM CO.: Nantahala National Forest, Cherohala Skyway/NC 143, Mudd Gap, 1.x.1997, on *Fagus*, R.C. Harris 41046 (NY). HAYWOOD CO.: Great Smoky Mountains National Park, Cataloochee Divide Trail 0–0.25 mi SE of Polls Gap, 7.viii.2012, on *Acer*, J.C. Lendemer 32899 & E.A. Tripp (NY). MONTGOMERY CO.: Black Ankle Bog Preserve, 19.iv.2008, on *Quercus* sapling, G.B. Perlmutter et al. 1443 (NY). **TENNESSEE.** DICKSON CO.: US70 2 mi W of White Bluff, 12.vi.1960, on bark, G.T. Johnson s.n. (NY). SEVIER CO.: Great Smoky Mountains National Park, summit area of Mt. LeConte, 9.x.2011, on old *Betula*, J.C. Lendemer et al. 30413 (NY). **WEST VIRGINIA.** POCAHONTAS CO.: Watoga State Park, Brooks Memorial Arboretum, 1.x.2000, on *Acer*, R.C. Harris 44010 (NY).





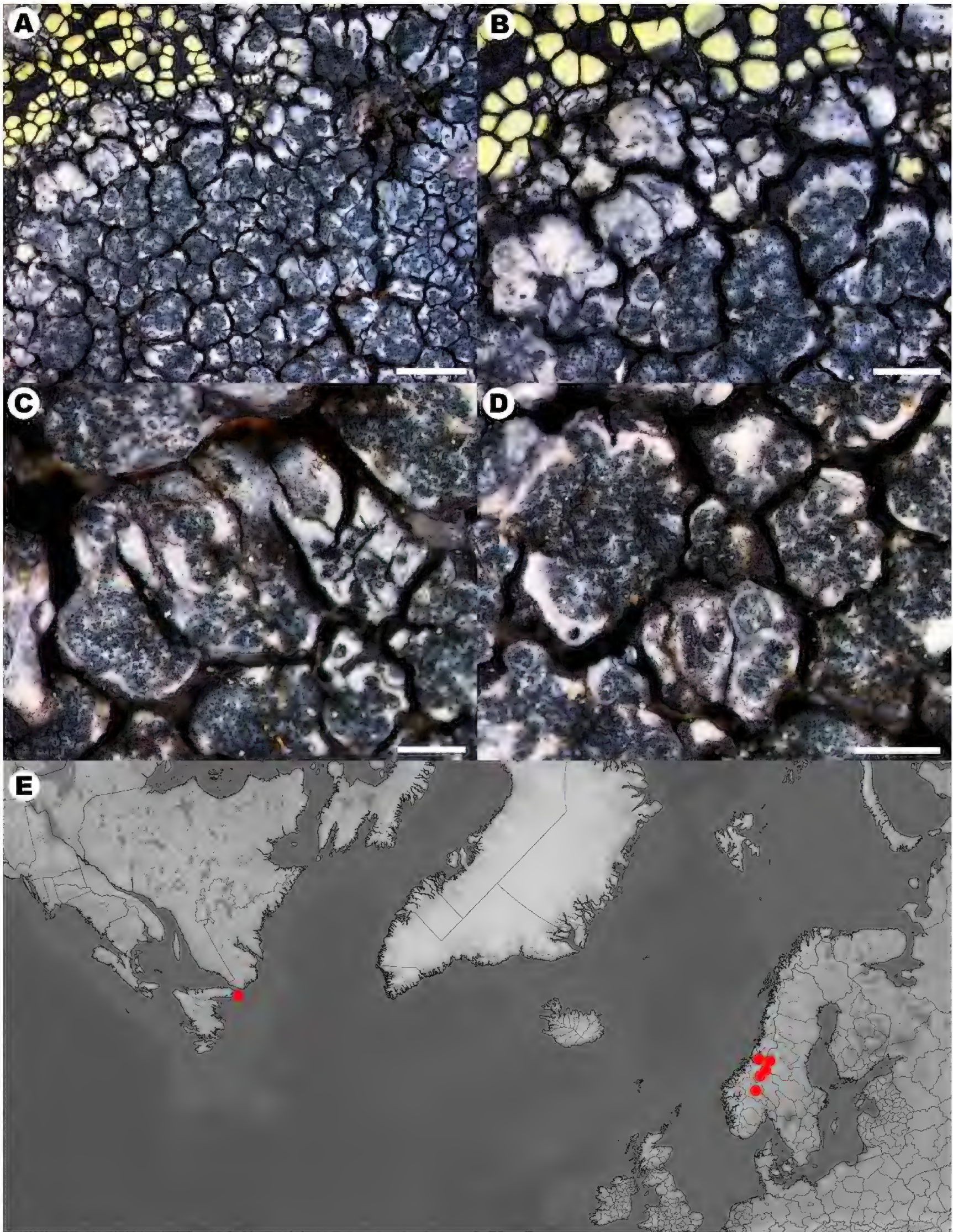
**Figure 1.** Morphology of the lectotype of *Arthothelium lichenum*. A, gross morphology of the thallus and ascomata. B, detail of compound (i.e., multilocular) ascomata. C, transverse section of multilocular ascoma illustrating multiple chambers. D, moribund ascospore that has begun to collapse. Scales = 2.0 mm in A, 0.4 mm in B, 100  $\mu$ m in C, 20  $\mu$ m in D.

## NOTE II - *CALVITIMELA CUPREA* NEW TO NORTH AMERICA

*Calvitimela cuprea* Haugan & Timdal in Bendiksby, Haugan, Spribille & Timdal, Mycologia 107: 1180. 2015. **TYPE: NORWAY. HEDMARK:** Tynset, Fådalsgruva, former mine in Mount Gruvkletten, 17.vi.2012, on rock, M. Bendiksby et al. ET12642 (O[n.v.], holotype).

Discussion. – While inventorying the lichens of the northern tip of the Northern Peninsula of Newfoundland in 2007, the first author encountered an unusual saxicolous crustose lichen with distinctive white areoles and dark blue-black soredia that were formed in irregularly shaped soralia (Figures 2A–D). The species grew on ultramafic rocks and produced atranorin and substances of the stictic acid aggregate together with accessory norstictic acid. Initial attempts to identify the specimen were unsuccessful, and as such it was filed away in the undetermined sterile crustose lichens at NY. Subsequently when indexing the recent contribution on *Calvitimela* by Bendiksby et al. (2015) the first author made the connection between *C. cuprea*, which was newly described therein, and the specimen collected in Newfoundland. Further study confirmed that the material was conspecific with *C. cuprea* and thus represents the first report from North America. Previously *C. cuprea* was known only from Norway and Sweden (Figure 2E), mostly from the sites of former copper or nickel mines where metal-rich rocks would have occurred. The discovery of this species in coastal northern Newfoundland, also on metal-rich ultramafic rocks, is not surprising given the biogeographic affinities of the lichen biota of that region (Ahti 1983).





**Figure 2.** Morphology (all from *Lendemer 10688*) and geographic distribution of *Calvitimela cuprea*. A, gross morphology of the thallus. B, detail of thallus margins. C and D, detail of irregularly shaped areoles and soralia with blue-black soredia. E, geographic distribution based on specimen examined for this study and records from the protologue. Scales = 2.0 mm in A, 1.0 mm in B, 0.5 mm in C and D.



*Specimen examined.* – **CANADA. NEWFOUNDLAND AND LABRADOR:** Island of Newfoundland, Northern Peninsula, hills above town of Quirpon, 18.viii.2007, on rock, J.C. Lendemer 10688 & A. Moroz (MSC, NY).

### NOTE III - *HYPOTRACHYNA CONSIMILIS* NEW TO NORTH AMERICA

*Hypotrachyna consimilis* (Vain.) Hale, Smithsonian Contr. Bot. 23: 28. 1975.  $\equiv$  *Parmelia consimilis* Vain., Acta Soc. Fauna Fl. Fenn. 7: 58. 1890.  $\equiv$  *Remototrachyna consimilis* (Vain.) Flakus, Kukwa & Sipman, in Flakus, Rodríguez Saavedra & Kukwa, Mycotaxon 119: 161. 2012. **TYPE: BRAZIL. MINAS GERAIS:** Caraça, 3-5.iii.1885, E. Vainio s.n. = *Lich. Bras. Exs. No. 1295* (TUR-V[n.v.], lectotype (designated by Hale 1975)).

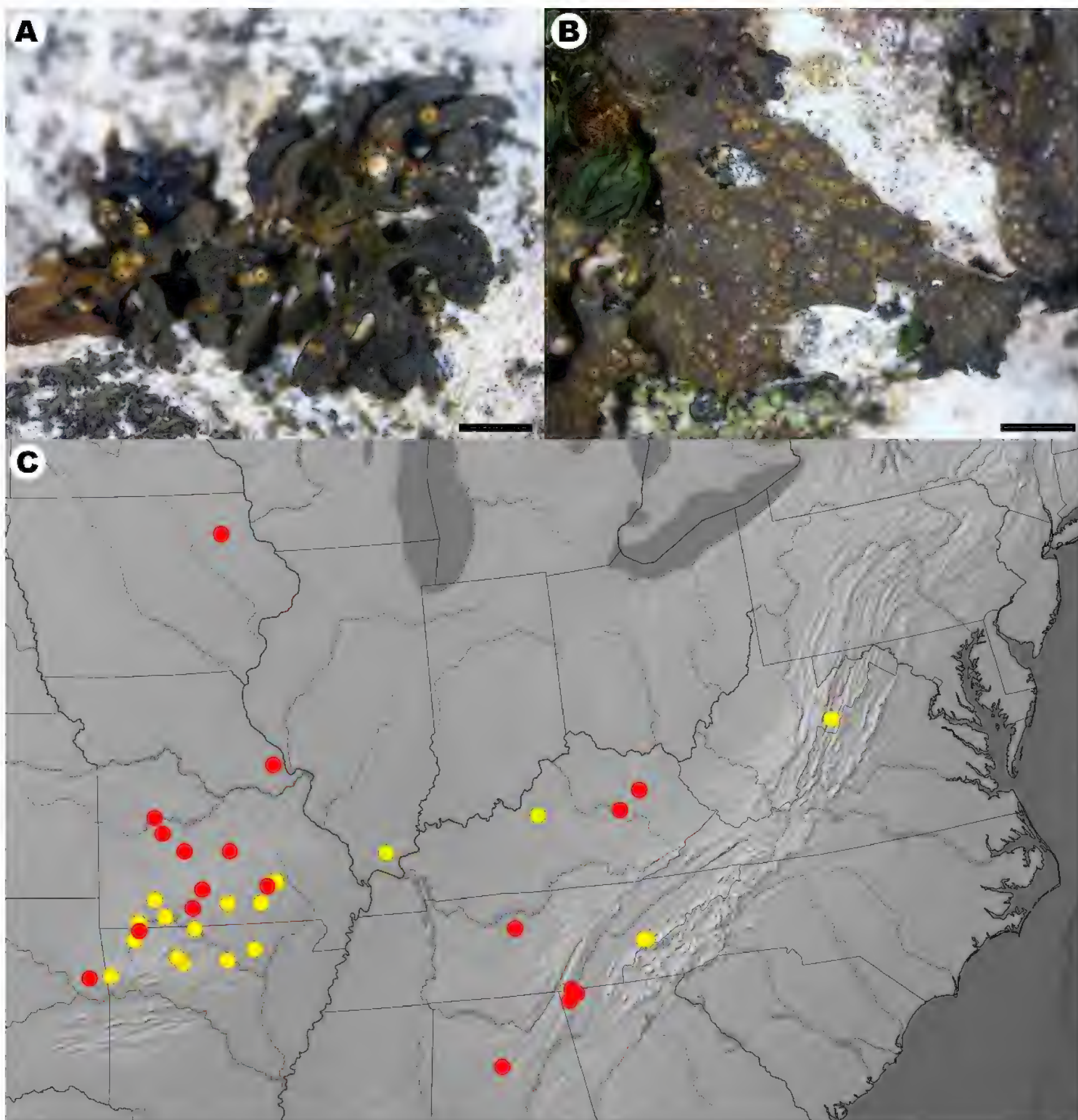
Discussion. – During work in Great Smoky Mountains National Park in eastern North America the first author inventoried several old-growth stands of American hemlock (*Tsuga canadensis*) that had died as part of the recent infestation of Hemlock Woolly Adelgid (*Adelges tsugae*). Normally the canopies of trees in such stands would be inaccessible, however as the trees had died, numerous canopy branches littered the ground. Among the species found on such canopy branches was an unusual isidiate foliose lichen (Figure 3) that was quickly identified as a member of the genus *Hypotrachyna* in the field. Subsequent examination revealed the presence of protocetraric acid and the absence of caperatic acid the medulla, characters that combined with the presence of isidia did not readily fit any species presently known from the region (Lendemer et al. 2013). Review of the literature led to the identification of the specimen as *H. consimilis*, a species that is rare but widespread in montane areas of the West Indies and Central America (Sipman et al. 2009), also occurring in northern South America, and southeast Asia (Kurokawa & Lai 2001, Louwhoff & Elix 2002, Sipman et al. 2009). This is the first report of *H. consimilis* from North America.

While we did not detect orange pigments in the medulla, such pigments have been reported to be inconsistently present in *H. consimilis* and are likely irregularly produced in the thallus as is the case in other species such as *H. gondylophora* (Hale) Hale (Hale 1975, Sipman et al. 2009). The most similar member of the genus is *H. koyaensis* (Asah.) Hale, which differs in producing fatty acids in the medulla and in having much larger lobes (2-8 mm wide vs. 1-2 mm wide in *H. consimilis*). It should be noted that Flakus et al. (2012) transferred *H. consimilis* to the genus *Remototrachyna* Divakar & A. Crespo, however we retain the taxon in *Hypotrachyna* here pending study with molecular data.

*Specimen examined.* – **U.S.A. NORTH CAROLINA. HAYWOOD CO.:** Great Smoky Mountains National Park, Pretty Hollow Gap Trail 0.5-2.5 mi N of jct w/ Palmer Creek Trail, 20.x.2012, on fallen *Tsuga* branch, J.C. Lendemer 33340 & A. Moroz (NY).

### NOTE IV – CLARIFICATION OF *COLLEMA PUSTULATUM* AND *LEPTOGIUM APALACHENSE*

Discussion. – *Leptogium apalachense* is an unusual foliose cyanolichen with thick, cylindrical, branch-like lobes and apothecia that are initially immersed in the thallus but eventually become raised and sessile (Sierk 1964). Since being described more than sixty years ago from a small number of collections in a limited geographic area of southeastern North America, the species has not been found outside of the region and is considered to be a rare endemic (Harris & Ladd 2005, Sierk 1964). Recently, while performing an initial conservation assessment for *L. apalachense*, we discovered that material filed under that name at NY included several misidentifications of *Collema pustulatum*. This led us to reexamine the material filed as *C. pustulatum*, and to the discovery that several specimens of *L. apalachense* had been misidentified as that taxon. As is illustrated here (Figures 4A & B) the two species are easily distinguished by their lobe morphology (broad and flat in *C. pustulatum* vs. narrow and nearly fruticose in *L. apalachense*), apothecia (immersed in *C. pustulatum* vs. initially immersed but quickly sessile and raised in *L. apalachense*), and also ascospores (submuriform in *C. pustulatum* vs. transversely septate in *L. apalachense*). Although the two species are readily separated even in the field, as is evidenced by our errors in identification, they can be confused when relying on accounts in the literature and in the absence of illustrations (the first color illustrations of *L. apalachense* are those published herein). Confusion is particularly likely in cases where thalli of *L. apalachense* have sparse or immature apothecia that have not yet emerged from the thallus to become distinctly raised and sessile. Further ascospores were lacking in m-



**Figure 4.** Morphology and distribution of *Collema pustulatum* and *Leptogium apalachense*. A, typical thallus of *L. apalachense* with partially immersed apothecia and narrow, nearly erect lobes (Beeching 13816). B, typical thallus *C. pustulatum* with immersed apothecia and broad lobes (Lendemer 26484). C, geographic distributions of *L. apalachense* (red dots) and *C. pustulatum* (yellow dots) based on specimens examined for this study.

-any of the specimens examined. Interestingly, based on the revised distributions presented here (Figure 4C) although the two species occur in the same general areas of eastern North America, they are largely allopatric and do not typically occur together even though both occur on calcareous rocks.

*Selected specimens of Leptogium apalachense examined.* – **U.S.A. ARKANSAS.** CARROLL CO.: along US62 just NE of the White River, 2.xi.2000, on dolomite, *W.R. Buck* 38728 (NY). **GEORGIA.** WALKER CO.: Lookout Mountain, E slope along SR136, 26.x.2012, on limestone, *S.Q. Beeching* 13816 (NY). **IOWA.** FAYETTE CO.: Fayette, ix.1893, on calcareous rock, *B. Fink s.n.* (NY), 1895, on calcareous rock, *B. Fink s.n.* (NY). **KENTUCKY.** ESTILL CO.: Daniel Boone National Forest, ca. 1.5 mi NW of Cottage Furnace of Campground on FSR230, 11.x.1995, on limestone, *R.C. Harris* 37011 (NY).



ROWAN CO.: Daniel Boone National Forest, bluffs at SE end of Cave Run Lake, 9.x.1995, on calcareous rock, *R.C. Harris* 36850 (NY). **MISSOURI.** OZARK CO.: Mark Twain National Forest, along ridge E of Waterhole Hollow, 19.v.2003, on calcareous rock, *W.R. Buck* 44416 (NY). SHANNON CO.: Ozark National Scenic Riverways, vicinity of Rocky Falls off CR-NN, 24.ix.1990, on limestone, *W.R. Buck* 18172 (NY). **OKLAHOMA.** CHEROKEE CO.: Cookson Wildlife Management Area, along Bolin Hollow Rd. at Jeff Baggett Field, 14.iv.2004, on limestone, *W.R. Buck* 46494 (NY). **TENNESSEE.** HAMILTON CO.: Lookout Mt., sine date, *W.W. Calkins North American Lichens* 19 (NY), 1892, *W.W. Calkins s.n.* (NY).

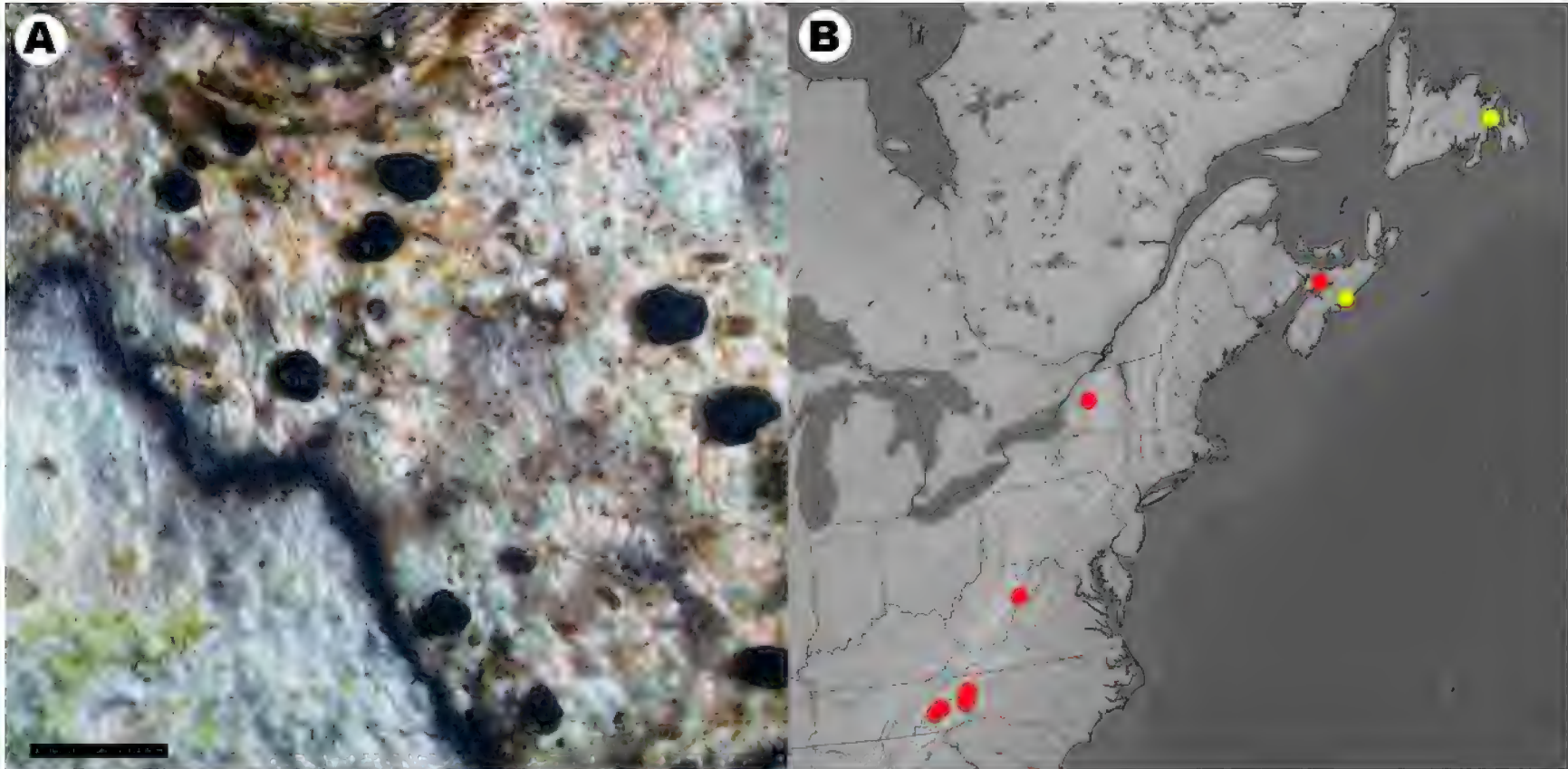
*Selected specimens of Collema pustulatum examined. – U.S.A. ALABAMA.* [County unknown].: sine loc., on calcareous rock, *T.M. Peters s.n.* (NY). **ARKANSAS.** BENTON CO.: Hobbs States Park-Conservation Area, along Page Sawmill Rd., 19.x.2005, on limestone, *R.C. Harris* 51745 (NY). MARION CO.: Jones Point Wildlife Management Area, on peninsula in Bull Shoals Lake, 16.iv.2005, on calcareous rocks, *W.R. Buck* 48712 (NY). NEWTON CO.: Buffalo National River, along CR84 at Hasty Low Water Bridge, 17.iv.2005, on calcareous rock, *W.R. Buck* 48815 (NY). SHARP CO.: Strawberry River Preserve, off Barnes Rd./CR9, 3 mi NE of AR56, 25.x.2001, on calcareous rock, *R.C. Harris* 45486 (NY). STONE CO.: Hell Creek Natural Area, ~3.5 mi NNE of Mountain View, 8.x.2010, on dolomite, *J.C. Lendemer* 26484 & *D. Ladd* (NY). **ILLINOIS.** JOHNSON CO.: Shawnee National Forest, Simpson Township's Barrens, 16.x.1993, on calcareous rocks, *W.R. Buck* 24245 (NY). **IOWA.** FAYETTE CO.: Fayette, 1896, on limestone, *B. Fink s.n.* (NY). **KENTUCKY.** NELSON CO.: Bernheim Arboretum and Research Forest, ~7 mi NW Bardstown, 27.iii.2002, on limestone, *D. Ladd* 23563 & *M. Ladd* (NY). **MISSOURI.** OZARK CO.: Mark Twain National Forest, along ridge E of Waterhole Hollow, 19.v.2003, on calcareous rock, *W.R. Buck* 44393 (NY); Mark Twain National Forest, McCormack Lake Recreation Area, 10.x.1997, on calcareous rock, *W.R. Buck* 32770 (NY). PHELPS CO.: Mark Twain National Forest, Roluf Spring woodland restoration area, 31.iii.1994, on dolomite, *D. Ladd et al.* 17968 (NY). REYNOLDS CO.: Deer Run State Forest, 9.iii.1996, on dolomite, *T. Chadwell* 140 (NY). SHANNON CO.: Ozark National Scenic Riverways, vicinity of Rocky Falls off CR-NN, 24.ix.1990, on limestone, *W.R. Buck* 18163 (NY). **TENNESSEE.** BLOUNT CO.: Great Smoky Mountains National Park, Rich Mountain Trail near N end of Old Cades Cove Rd., 30.vi.2010, on dolomite, *R.C. Harris* 56351 (NY); Great Smoky Mountains National Park, White Oaks Sinks, 13.x.2010, on calcareous rock, *J.C. Lendemer et al.* 26847 (NY), *J.C. Lendemer et al.* 26868 (NY). HAMILTON CO.: Lookout Mt., sine date, *W.W. Calkins* 7 (NY). WILSON CO.: Cedars of Lebanon State Park, vi.1988, on calcareous rock, *J.P. Dey* 17439 (NY). **WEST VIRGINIA.** PENDLETON CO.: South Branch Potomac River, Franklin Gorge, 29.v.2013, on limestone, *B.P. Streets* 4750 & *J. Vanderhorst* (NY).

#### NOTE V – AN EXPANDED DISTRIBUTION FOR *LECIDEA ROSEOTINCTA*

*Lecidea roseotincta* Coppins & Tonsberg, Nordic Journal of Botany 8: 415. 1988. **TYPE: NORWAY:** Sogn og Fjordene, Førde, the S slope of Mt Førdsnipa, between Skei and Skeistølen, 24.viii.1985, on *Alnus*, *T. Tonsberg* 9351 (BG[n.v.], holotype).

Beginning with a field trip to West Virginia in 1976 the second author occasionally encountered an unusual corticolous crustose lichen (Figure 5A) during fieldwork in eastern North America. The species was very distinctive on account of its creamy white thallus, small black lecideine apothecia, psoromic acid, polysporous asci and hyaline medially constricted ascospores. In spite of the very distinctive characters of the species, a name was not immediately located through a review of the literature and thus specimens accumulated among the undetermined material at NY. Subsequently when the first author began to inventory the lichens of Great Smoky Mountains National Park, a very similar species was encountered in high elevation spruce-fir forests. Despite the presence of numerous apothecia on the thalli from the southern Appalachian Mountains, repeated study failed to locate mature asci with ascospores and thus the specimens also remained unidentified.

As fieldwork continued in the southern Appalachian Mountains we set out to determine the application of several *Lecidea* names that had previously been used in the region but we were nonetheless unfamiliar with (see Lendemer & Harris 2014). Among these names was *L. roseotincta*, a species that had been included in the lichen checklist for Great Smoky Mountains National Park based on unpublished reports by Tor Tønsberg that had been submitted to the National Park Service. Examination of the original



**Figure 5.** Gross morphology and North American geographic distribution of *Lecidea roseotincta*. A, typical thallus from the southern Appalachian Mountains with pale white coloration (Lendemer 43588, NY). B, geographic distribution in eastern North America based on specimens examined for this study (red dots) and those reported by Tønsberg (1993).

description of *L. roseotincta* (Coppins & Tønsberg 1998) revealed it matched our material in nearly every respect. The only differences were that none of our specimens had the pinkish or reddish coloration referred to in the protologue, and that while the only fertile Appalachian specimens had constricted ascospores, these were consistently simple rather than 1-septate. After several years of fieldwork we finally located material from the southern Appalachians that had abundant mature ascospores, and these matched the other Appalachian specimens in having consistently simple ascospores.

Given the differences in thallus coloration and ascospores septation we generated sequences from recently collected material in the southern Appalachians and compared them to reference sequences of European material in GenBank. The mtSSU sequence (GenBank KY123745) generated from southern Appalachian material was nearly identical to that of European material (GenBank HQ660575, from Norway), with a Jukes-Cantor distance of only 0.002. Similarly, the Jukes-Cantor distance between an nrITS sequence generated from southern Appalachian material (GenBank KY123744) and one from European material (GenBank HQ650670, from Norway) was 0.02985. The latter value being well within the distance threshold typically observed within, rather than between, species of lichenized fungi (e.g., Divakar et al. 2016, Lendemer 2011b, Lendemer & Harris 2014, Lendemer & Ruiz 2015, Nilsson et al. 2008). As such we treat the Appalachian material as *L. roseotincta*, extending its range considerably southward in North America (Figure 5B) where it was previously known only from the maritime regions of the eastern and western coasts (Tønsberg 1993).

*Selected specimens examined.* – **CANADA. NOVA SCOTIA.** HALIFAX CO.: S of Musquodoboit Harbour, along the road 1–2 km S of East Petpeswick, 11.vi.1991, on *Alnus*, T. Tønsberg 16840 (NY). **U.S.A. NEW YORK.** ST. LAWRENCE CO.: trail to Little River, ~1 mi SW of Star Lake, 5.ix.1981, on *Populus*, R.C. Harris 13915 (NY). **NORTH CAROLINA.** SWAIN CO.: Great Smoky Mountains National Park, true summit of Luftee Knob, 9.viii.2012, on *Viburnum*, J.C. Lendemer 32966 & E. Tripp (NY); Great Smoky Mountains National Park, Appalachian Trail 0–1 mi E of Pecks Corner, 15.x.2012, on *Betula* branch, J.C. Lendemer 33221 & E.A. Tripp (NY), on *Abies*, J.C. Lendemer 33249 & E. Tripp (NY); Great Smoky Mountains National Park, trail from Clingman's Dome to Andrew's Bald, 10.x.2011, on dead *Betula*, E. Tripp et al. 2225 (COLO, NY); Great Smoky Mountains National Park, Appalachian Trail near Charlies Bunion, 2.iv.2014, on *Betula*, J. Hollinger 3131B & N. Noell (NY); Great Smoky Mountains National Park, upper NW facing slopes and summit of Mount Hardison, 29.v.2014, on *Sorbus* branch, J.C. Lendemer 43320 & J. Toll (NY). **YANCEY CO.:** Pisgah National Forest, summit of Cattail Peak, 31.v.2014, on *Sorbus*, J.C. Lendemer et al. 43587 (NY), J.C. Lendemer et al. 43588 (NY), on



*Abies* branch, J.C. Lendemer et al. 43620 (NY); Pisgah National Forest, Deep Gap just S of camping area, Black Mountain Crest Trail 4.2 mi N of Mount Mitchell, 31.v.2014, on *Betula*, J.C. Lendemer et al. 43524 (NY); Mount Mitchell State Park, W slope of Mount Gibbs, 1.x.2014, on *Sorbus*, J.C. Lendemer 44016 & J. Allen (NY). **TENNESSEE.** CARTER CO.: trail to Roan High Knob, Roan Mountain, 5.x.1985, on *Abies*, R.C. Harris 18290 (NY). SEVIER CO.: Great Smoky Mountains National Park, Inadu Knob to Mt. Guyot summit, 14.x.2011, on *Abies*, E. Tripp et al. 2469 (COLO, NY); Great Smoky Mountains National Park, Mt. Love, 18.vi.2015, on *Sorbus*, J.C. Lendemer 45742 & J. Allen (NY); Great Smoky Mountains National Park, N-facing slope N of Appalachian Trail 0.2 mi S of summit of Mount Collins, 6.i.2016, on *Picea* branch, J.C. Lendemer et al. 46219 (NY); Great Smoky Mountains National Park, summit of Clingmans Dome, 6.i.2016, on *Sorbus*, J.C. Lendemer et al. 46189 (NY). **WEST VIRGINIA.** PENDLETON CO.: shoulder of Spruce Knob, 8.v.1976, on *Betula*, R.C. Harris 10600 (NY), R.C. Harris 10606 (NY).

#### NOTE VI – AN EXPANDED DISTRIBUTION FOR *LECIDELLA SUBVIRIDIS*

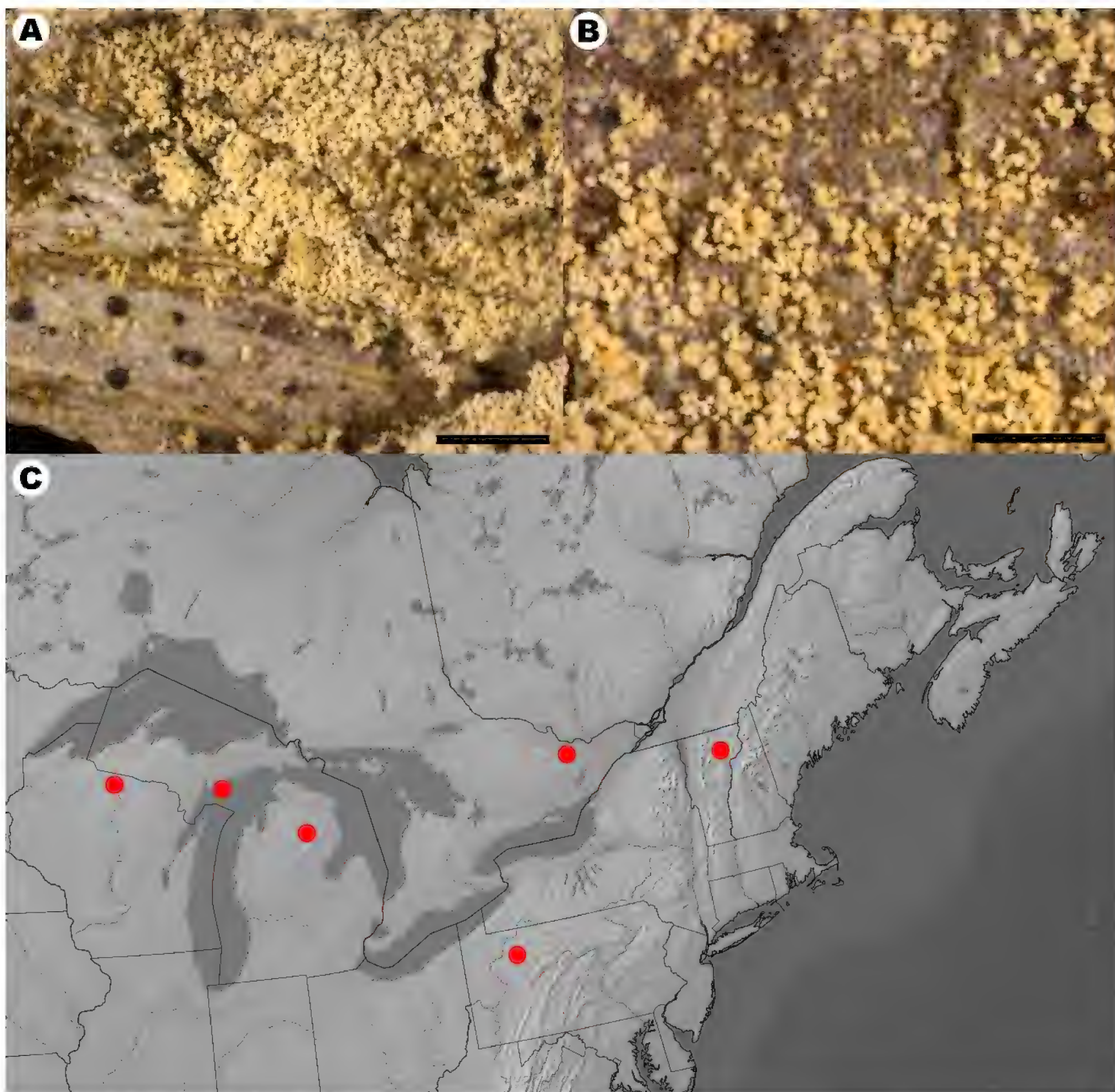
*Lecidella subviridis* Tønsberg, Sommerfeltia 14: 192. 1992. **TYPE: NORWAY. HORDALAND:** Os, Strøno, small peninsula E of Store Hestholmen, 9.iv.1989, on maritime *Calluna vulgaris*, T. Tønsberg 11480 (BG[n.v], holotype).

Discussion. – *Lecidella subviridis* is a sorediate crustose lichen (Figure 6A & B) that was originally described from Norway by Tønsberg (1992) and subsequently reported from many other regions of northern and central Europe (Czarnota & Kukwa 2004, Mrak et al. 2004, Prigodina-Lukosiene et al. 2003, Suija et al. 2001, Turk 2004, Wirth 1997). The species was also reported from North America by Coppins and Fryday (2006) based on several collections made by the second author in Michigan as a graduate student. While revising the keys to the lichens of the Michigan Straits Region (Harris 1977) in preparation for the 2015 Tuckerman Workshop, we were inspired to examine the holdings of sterile sorediate crustose lichens at NY for additional material of *L. subviridis*. Our search yielded several collections that extend the known distribution of the species in North America. A map of the distribution of the species in North America as presently known is presented here (Figure 6C).

The majority of North American collections we have seen were made on the bark of white cedar (*Thuja occidentalis*) in humid cedar swamps. A single collection from Pennsylvania was made on the bark of poplar (*Populus*), however the site was a humid seepy habitat. Although only a small number of collections are reported here, we suspect that the species is more widespread in cedar swamps throughout northeastern North America and has simply been overlooked. It can be recognized by the yellowish soredia that develop from eroding soralia immersed in the thallus, which give the superficial appearance of a leprose crustose lichen such as *Lepraria*, together with the production of arthothelin and thiophanic acid in addition to atranorin. The species is most likely to be confused with *Pyrrhospora quernea* (Dicks.) Körb. or *Lecanora expallens* Ach., both of which are morphologically similar and also produce xanthones. However, *P. quernea* does not produce atranorin and is not known to occur in eastern North America (Ryan et al. 2004), although a similar undescribed species is common in the southeastern Coastal Plain (Lendemer & Harris unpublished). *Lecanora expallens* produces usnic acid and zeorin in addition to xanthones, and is extremely rare in eastern North America, only known with certainty from coastal Maine (see cited specimens below).

*Specimens of Lecidella subviridis examined.* – **CANADA. ONTARIO.** LANARK CO.: N of Peneshula Rd. 0.6 mi W of int. w/ Cedar Cove Rd., 21.v.2011, on *Thuja*, J.C. Lendemer 28247 & R.E. Lee (NY). **ESTONIA.** SAARE CO.: Kärlaa Comm., Mönnusta, 2.vii.2011, on *Juniperus*, E. Leppik s.n. (NY). **NORWAY. HORDALAND:** Lindås, E of Hindnesfjorden, 3.iv.1984, on deciduous tree, T. Tønsberg 8594 (NY). **U.S.A. MICHIGAN.** DELTA CO.: ~0.3 mi S of Portage Bay Campground, 19.ix.1976, on *Thuja*, R.C. Harris 11954 (NY). OSCODA CO.: East Branch of Big Creek (upstream from Mapes Rd.), 14.ix.1972, on *Thuja*, R.C. Harris 8351 (NY). **PENNSYLVANIA.** FOREST CO.: Allegheny National Forest, FR131 0.25 mi N of jct w/ FR378, 9.ix.2010, on *Populus*, J.C. Lendemer 25013 (NY). **VERMONT.** CALEDONIA CO.: Wheelock Farm, NW shore of Flagg Pond, 22.x.2010, on *Thuja*, J.C. Lendemer 27510 & M. Sundue (NY). **WISCONSIN.** VILAS CO.: Northern Highland State Forest, Trout Lake Conifer Swamp State Natural Area, 28.iv.2002, on *Thuja*, R.C. Harris 45914 (NY).





**Figure 6.** Morphology (both from *Harris 11954*) and North American distribution of *Lecidella subviridis*. A, gross morphology of the thallus giving the superficial appearance of a *Lepraria*. B, detail of thallus illustrating development of areoles burst into soredia and eventually dissolve to resemble a pile of granules. C, geographic distribution in North America based on specimens examined for this study. Scales = 1.0 mm in A, 0.5 mm in B.

*Selected specimens of Lecanora expallens examined.* – **CANADA. BRITISH COLUMBIA:** Queen Charlotte Island, Moresby Island, Sandspit Airport, 25.vii.1967, on log, *I.M. Brodo 12420 & M.J. Shchepanek* (NY). **U.S.A. CALIFORNIA.** LOS ANGELES CO.: Palos Verdes, Bluff Cove, 18.i.2012, on wood, *J. Hollinger 4391* (NY). SAN DIEGO CO.: Del Mar, St. Dieguito Lagoon, 15.x.2004, on wood, *K. Knudsen 1923 & A. Sanders* (NY). SAN LUIS OBISPO CO.: Morro Bay State Park, Estuary Preserve, 25.viii.2007, on wood, *K. Knudsen et al. 8988* (NY). **MAINE.** WASHINGTON CO.: Great Wass Island, Loop Trail, 7.vi.2010, on *Betula* base, *J.C. Lendemer 22596* (NY).

**NOTE VII – NORTH AMERICAN RECORDS OF *PARMOTREMA ZOLLINGERI* ARE *P. OVEREEMII***

*Parmotrema overeemii* (**Zahlbr.**) **Elix**, Australas. Lichenol. 42: 23. 1998.  $\equiv$  *Parmelia overeemii* Zahlbr., Annals Cryptog. Exot. 1(2): 204. 1928. **TYPE: INDONESIA. JAVA:** Mt. Tjibodas, *Overeem 94* (W[n.v.], holotype; US[barcode 0068936]!, isotype).

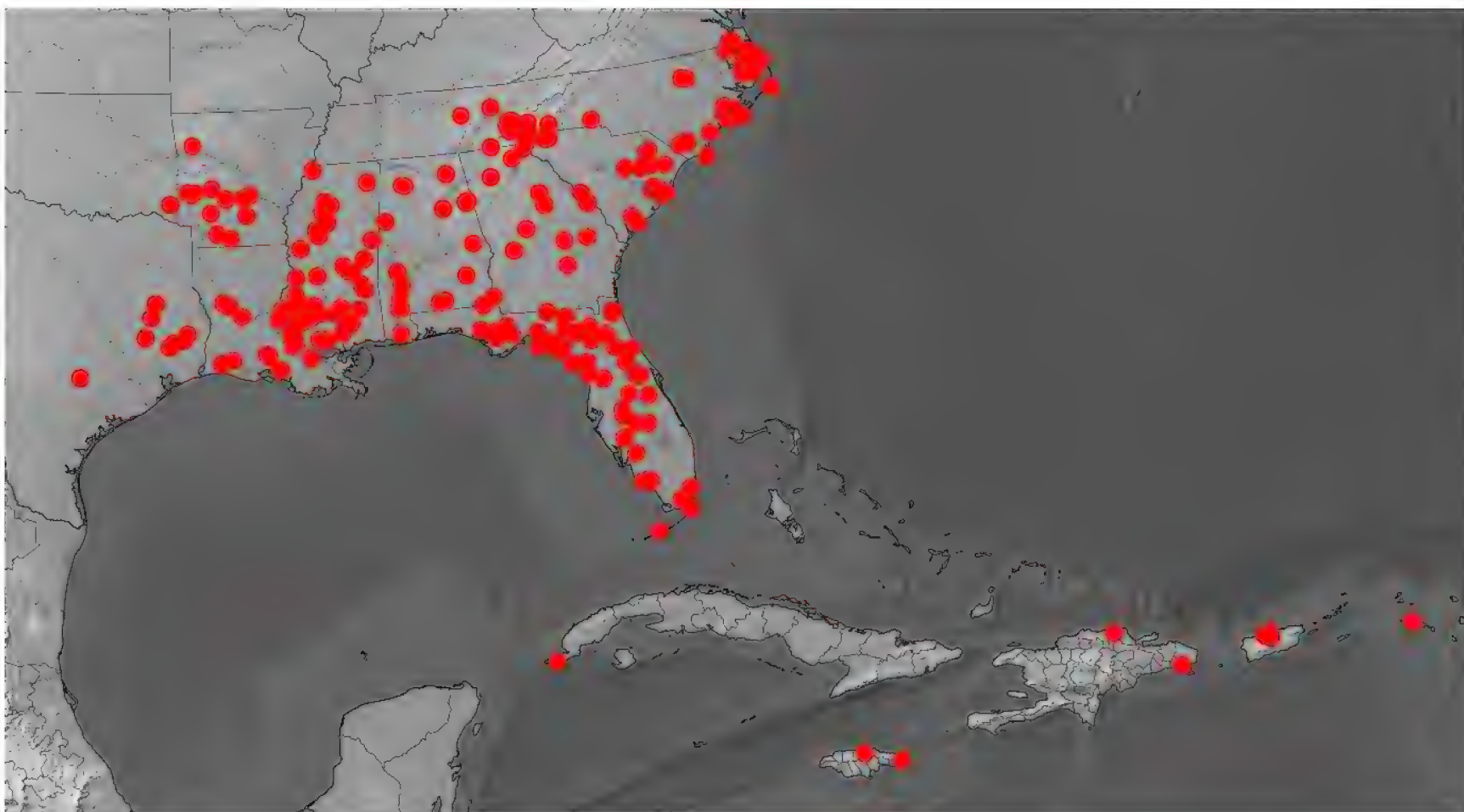




**Figure 7.** Geographic distribution of *Parmotrema overeemii* in North America based on specimens examined for this study.

Notes. – While preparing the NY holdings of *Parmotrema* for an herbarium expansion project we realized that specimens of *P. overeemii* from North America were filed as *P. zollingeri* (Hepp) Hale and had not been annotated in light of the revision of that taxon by Elix (1998). When Elix (1998) revised *P. zollingeri* he recognized that the type material was not chemically and morphologically congruent with the majority of specimens that had previously been referred to that name. This led to the recognition of seven separate species that could potentially be confused with *P. zollingeri*. Noting that *P. zollingeri* was still included on the North American checklist (Esslinger 2015) we revised the material at NY using the treatment proposed by Elix (1998). All of the specimens from North America that had been identified as *P. zollingeri* corresponded with the current concept of *P. overeemii* in having membranaceous, eciliate thalli that lacked lichenized diaspores and instead have abundant apothecia, sublageniform conidia, and protocetraric acid in the medulla. The ascospores were somewhat on the low end of the size range given by Elix (1998) for *P. overeemii* ( $[13.7]–15.9–17.7–19.4–[21.1] \times [7.4]–8.0–8.9–9.8–[10.4] \mu\text{m}$  ( $n=27$ ) in our material vs.  $18–22 \times 8–12 \mu\text{m}$ ). Based on the above we report *P. overeemii* for the first time from North America and suggest that *P. zollingeri* should be removed from the North American checklist. We also report the species from scattered locations in the Caribbean and Central America. *Parmotrema overeemii* is a rare species in North America that appears to be known almost entirely from historical collections made in tropical Florida (i.e., the Everglades and Florida Keys; see figure 7). The only taxon likely to be confused with it is *P. submarginale*, which differs in having narrower lobes, smaller thalli, rod-shaped conidia, and marginal cilia (Harris 1995).

*Selected specimens examined.* – **BAHAMAS.** ABACO: opposite Cherokee Settlement, 31.xii.1904, on trees, *L.C.K. Brace* 1983 (NY). CROOKED ISLAND: Landrail Point, 9–23.i.1906, on living wood, *L.J.K. Brace* 4536 (NY). NEW PROVIDENCE: Lake Cunningham, 6.ii.1905, on bark, *E.G. Britton* 3306 (NY). SAN SALVADOR ISLAND: [Watling's Island], Cockburn Town and vicinity, 12–13.iii.1907, on dead branches, *N.L. Britton* 6217 & *C.F. Millspaugh* (NY). **CAYMAN ISLANDS:** Grand Cayman, 0.5 mi W of Old Isaacs, 25.iv.1956, on *Strumpfia*, *G.R. Proctor* 15233 (NY). **CUBA.** ORIENTE: Punta Piedra, Nipe Bay, 7.iii.1912, on bark, *N.L. Britton et al.* 12495 (NY). PINAR DEL RIO: Rio Ruao, 17.iii.1911, on *Quercus*, *N.L. Britton et al.* 10138 (NY). SANTA CLARA: Punta Diablo, Cienfuegos Bay, 19.iii.1910, on bark, *N.L. Britton* 5685 & *P. Wilson* (NY). SANTIAGO DE CUBA: La Gran Piedra, SE of peak, 2.iv.1982, on bark, *R.C. Harris* 14194 (NY, fatty acids present). **DOMINICAN REPUBLIC.** SAN PEDRO DE MACORIS: E side of Rio Soco, just N of Hwy between San Pedro de Macoris and La Romana, 19.i.1987, on bark, *R.C. Harris* 20208 (NY). **GUATEMALA.** PETÉN: La Libertad, 20.iii.1933, on bark, *C.L. Lundell* 2237 (NY). **HAITI.** DEPT. DE L'OUEST: Massif de la Selle, 3 km S of Kenscoff, 17.xi.1982, on bark, *W.R. Buck* 9257 (NY). **HONDURAS.** OLANCHO: trail between Catacamas and La



**Figure 8.** Distribution of *Pyrenula leucostoma* in North America and adjacent areas of the Caribbean based on specimens examined for this study.

Presa, 20–25.iii.1949, on bark, *P.C. Standley 18579* (NY). **JAMAICA.** ST. ANDREW PARISH: St. Helen's Gap to Morces Gap, 29.iii.1946, on humus, *C.B. Lewis L17-A* (NY). **PUERTO RICO:** Caribbean National Forest, Toro Negro Division, along Hwy 143, 3.5 mi E of Hwy 138, 27.ii.1981, on vine, *W.R. Buck 3749* (NY). **U.S.A. FLORIDA.** MIAMI-DADE CO.: Snapper Hammocks, 30.iii.1904, on *Sapodillo*, *E.G. Britton 488* (NY); Matheson Hammock, 3.ii.1981, on *Laguncularia*, *S. Stein s.n.* (NY); Nixon-Lewis Hammock, 16.iii.1915, on bark, *J.K. Small 5861* & *C.A. Mosier* (NY); Royal Palm Hammock, 1.i.1916, on bark, *J.K. Small 7581* (NY). MONROE CO.: Big Pine Key, 27.ii.1911, on bark, *J.K. Small et al. s.n.* (NY), 21.iii.1915, *J.K. Small 5865* & *C.A. Mosier* (NY).

**NOTE VIII – *PYRENULA REEBIAE* IS CONSPECIFIC WITH *P. LEUCOSTOMA***

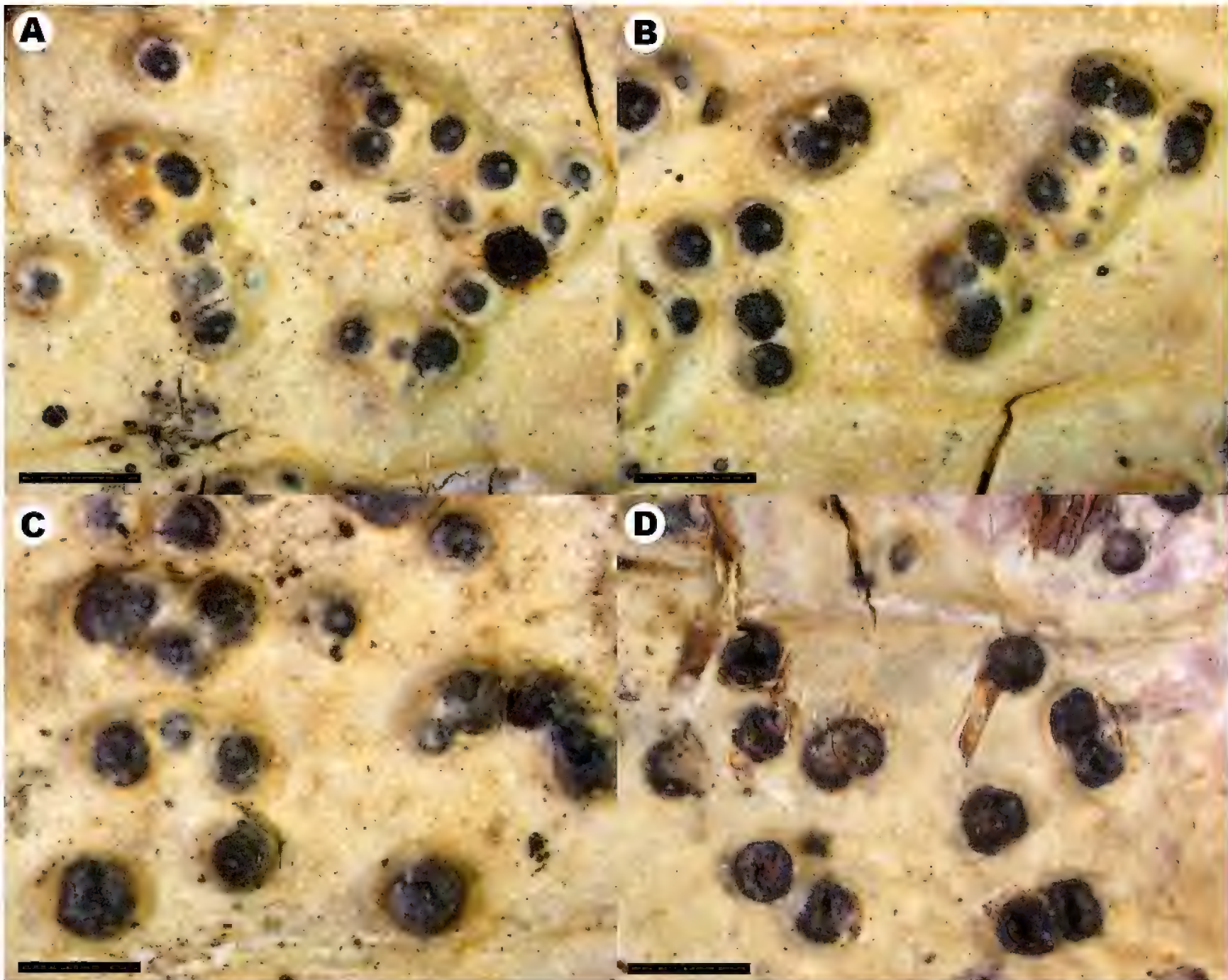
*Pyrenula leucostoma* Ach., Syn. meth. lich. 124. 1814. ≡ *Verrucaria leucostoma* (Ach.) Mont., Ann. Sci. Nat., Bot., sér. 2 19: 60. 1843. ≡ *Anthracothecium leucostomum* (Ach.) Malme, Ark. Bot. 22A(11): 32. 1929. – **TYPE:** “Habitat in India Occid. super corticem Crotonis Cascarillae.” (H-Ach. 837, right hand piece marked “B”, **lectotype designated here!**).

= *Pyrenula reebiae* Aptroot & Gueidan, Mycol. Prog. 15: 7 [pg. 19]. 2016. TYPE: **U.S.A. NORTH CAROLINA.** BLADEN CO.: along Cape Fear River close to Carvers, near the ferry, 14.vi.2002, on bark, *V. Reeb 14-VI-0215* (DUKE!, holotype).

Notes. – Recently Gueidan et al. (2016) described *Pyrenula reebiae* on the basis of a single collection made in the Mid-Atlantic Coastal Plain of North Carolina. Examining the illustrations from that publication we were struck by the similarity to *P. leucostoma*, a familiar species common in southeastern North America (Figure 8) that we encountered frequently during our inventory of the Mid-Atlantic Coastal Plain. Given the similarity of the protologue of *P. reebiae* to our concept of *P. leucostoma*, as well as the fact that *P. leucostoma* was neither compared to *P. reebiae* nor included in the taxon sampling for the phylogeny published by Gueidan et al. (2016) we were inspired to borrow the type material to determine the application of the name.

*Pyrenula leucostoma* as we have known it is a variable species and one with large perithecia most of which are often moribund (the hymenium is often attacked by a fungus) or have immature hymenia (sometimes regenerating within an old melanized wall). Apparently new ascomata are continuously produc-



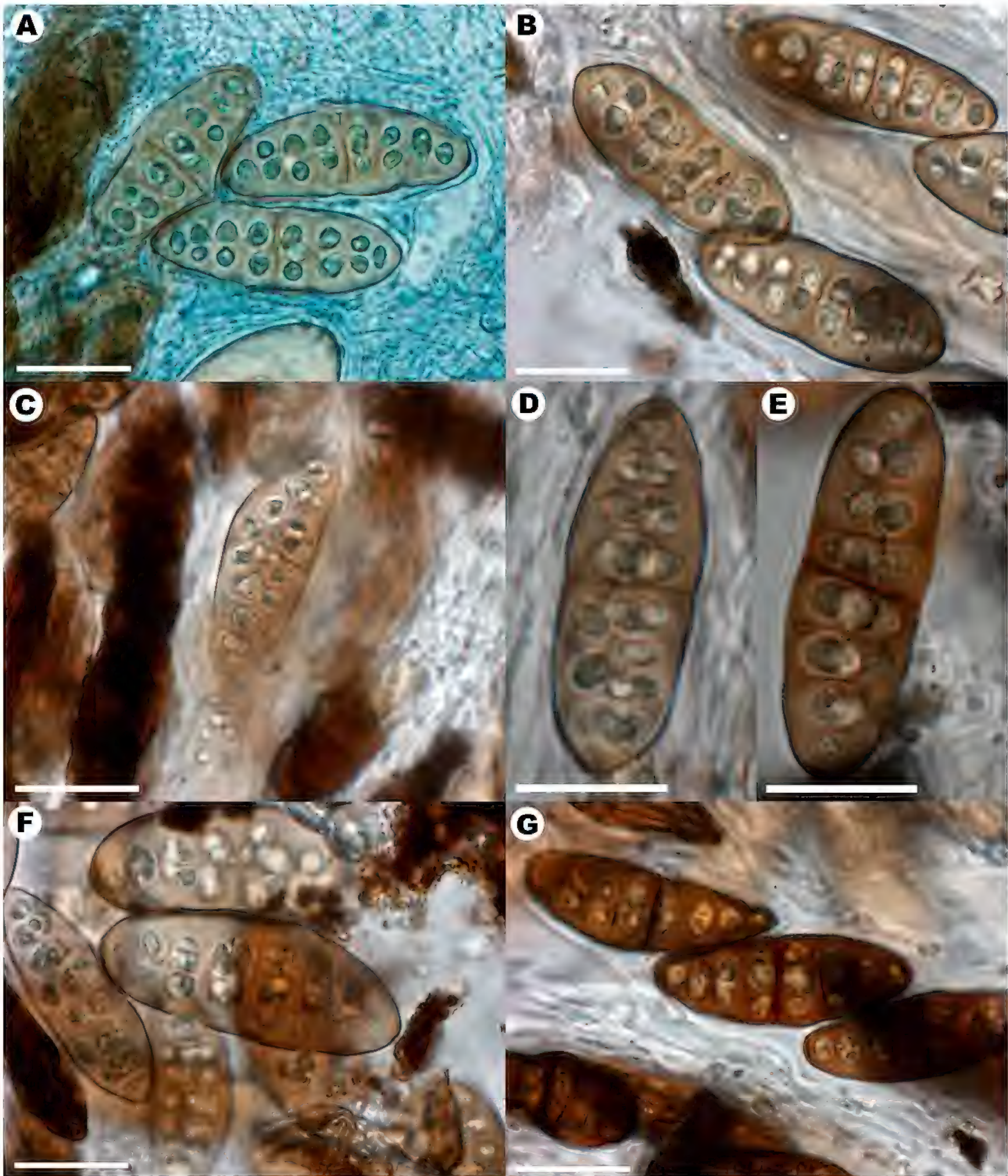


**Figure 9.** External morphology of *Pyrenula leucostoma*. A-C, variation in arrangement and clustering of ascoma in the holotype of *P. reebiae*. D, damaged and sterile ascoma from the holotype of *P. reebiae* that are typical of thalli of *P. leucostoma*. Scales = 2.0 mm in A, B and D; 1.0 mm in C.

-ed regardless of the existence of previous ascomata. This results in groups of two to several closely aggregated perithecia that can resemble compound ascomata which, even though simple ascomata are common on the same thallus, would have suggested placement in *Melanotheca* Fée (e.g., *M. cruenta* (Mont.) Müll. Arg.  $\equiv$  *P. cruenta* (Mont.) Vain.). Thus the aggregated ascomata noted in Gueidan et al. (2016) are not atypical of *P. leucostoma* (Figure 9). The ascospores of *P. leucostoma* are also variable and often only immature or overmature ascospores are present (Figure 10). Hymenial inspersion is also somewhat variable in that most specimens have a weakly inspersion hymenium with oil droplets concentrated in the lower portions of the hymenium. In our experience many species of *Pyrenula* have a small amount of scattered oil droplets in the hymenium. Nonetheless the inspersion that occurs in *P. leucostoma* is different from that of taxa such as *P. pseudobufonia* where the hymenium is always densely inspersioned.

When we examined the type of *Pyrenula reebiae* we were fortunate to find a small number of mature ascospores in the bottom of a moribund ascoma in a desiccated hymenium that was otherwise dominated by moribund ascospores. The ascospores, and the overall morphology of the type, are typical of *P. leucostoma*. Our concept of *P. leucostoma* is derived from authentic or isoelectotype material in UPS that was received from the Acharian herbarium (Figure 10A and B), and was identical to Acharian specimens that the second author has previously examined at BM, H-ACH and S. As far as we know *P. leucostoma* has never been formally typified and as such we select a lectotype here. Based on our study of *P. leucostoma* we suggest the pale coloration and pointed ends of the ascospores in the illustrations of *P. reebiae* published by Gueidan et al. (2016) represent immature ascospores. Although the small size (36–41





**Figure 10.** Comparison of ascospores from *P. leucostoma* (A and B, isolectotype, UPS) and the holotype of *P. reebiae* (C-G). A and B, typical mature ascospores of *P. leucostoma*. C, immature young ascospore from *P. reebiae* with atypical light coloration and pointed end. D-F, mature ascospores from *P. reebiae* that are typical of those of *P. leucostoma*. G, post-mature ascospores from *P. reebiae* where the internal contents of the ascospores have begun to degrade, the walls collapse, and the ends become somewhat pointed. Scales = 20  $\mu$ m.



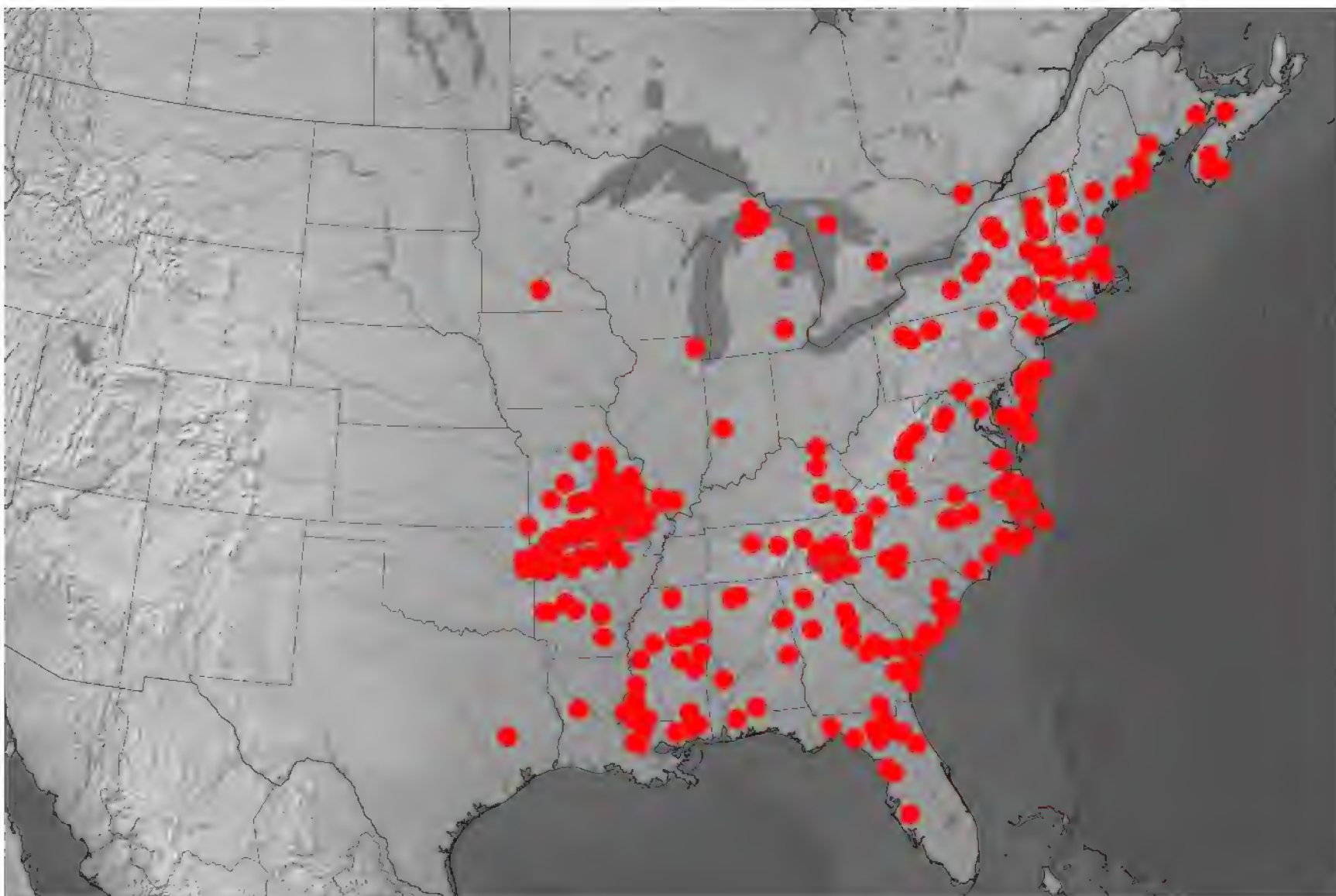
× 10–13 µm) reported in the protologue of *P. reebiae* could support that hypothesis, the ascospores we measured were larger (45–55 × 15–22 µm) than reported in the protologue and thus very similar to the range given for *P. leucostoma* by Harris (1989; 45–60 × 16–22(–25) µm).

*Selected specimens examined.* – **CUBA.** PINAR DEL RIO: Corrientes Bay, 10–12.iii.1911, on bark, *N.L. Britton 9947 & J.F. Cowell* (NY). **DOMINICAN REPUBLIC.** PROV. ESPAILLAT: 7.5 km E of Gaspar Hernández, 24.i.1991, on bark, *R.C. Harris 26792* (NY). PROV. LA ALTAGRACIA: 5.5 km S of La Romana-Higüey Hwy on road to Bayahibe, 22.i.1991, on bark, *R.C. Harris 26601* (NY). **JAMAICA.** ST. THOMAS PARISH: S slope of Winchester Peak, 1.1 mi NW of Wheelerfield, 10.iv.1981, on bark, *W.R. Buck 5611* (NY). ST. ANN PARISH: Green Park in Claremont, 7.v.1953, on bark, *H.A. Imshaug 15889* (NY). **PUERTO RICO.** ARECIBO DISTR.: ~1 km N of Ciales on Hwy 149, 11.vi.1988, on bark, *R.C. Harris 22623* (NY). SANTURCE DISTR.: 3 mi E of Santurce, 1899, on bark, *A.A. Heller 450* (NY). **U.S.A. ALABAMA.** BALDWIN CO.: Upper Delta Wildlife Management Area, Zone A, 12.iv.2007, on *Quercus*, *W.R. Buck 51610* (NY). CLARKE CO.: Fred T. Stimpson Wildlife Sanctuary, 31.vii.2003, on *Ilex*, *W.R. Buck 44819* (NY). CLEBURNE CO.: Talladega National Forest, ~0.5 mi S of FSR548 at Shooting Range, 5.viii.2005, on *Carpinus*, *C.J. Hansen 1997* (NY). COVINGTON CO.: Conecuh National Forest, Solon Dixon Forestry Education Center, Cave Rd., 14.iv.2007, on *Quercus*, *R.C. Harris* (NY). DEKALB/MARSHALL CO.: Buck's Pocket State Park, 3.x.1998, on *Acer*, *W.R. Buck 34663* (NY). ESCAMBIA CO.: Conecuh National Forest, Solon Dixon Forestry Education Center, River Bluff Rd., 14.iv.2007, on *Carpinus*, *R.C. Harris 53427* (NY). HOUSTON CO.: 13 mi S of Dothan, 5.ii.1965, on bark, *G.T. Johnson* (NY). LAWRENCE CO.: Bankhead National Forest, Johnson Cemetery Trail and Sipsey Fork Trail off CR60, 4.vii.2010, on *Betula*, *E.A. Tripp et al. 1287* (NY). LEE CO.: Auburn, 15.ii.1896, on bark, *F.S. Earle s.n.* (NY). MARENGO CO.: along Sweetwater Creek, 1 mi SE of Sweetwater, 20.x.1964, on bark, *G.T. Johnson s.n.* (NY). PICKENS CO.: near Coal Fire, 25.v.1964, on bark, *G.T. Johnson s.n.* (NY). SAINT CLAIR CO.: near Pell City, 23.x.1964, on bark, *G.T. Johnson s.n.* (NY). WINSTON CO.: Bankhead National Forest, Sipsey Wilderness, along trail by Sipsey Fork, 25.ix.1992, on *Ilex*, *R.C. Harris 28420* (NY). **ARKANSAS.** CALHOUN CO.: along Moro Creek, 5 mi SE of Fordyce, 19.x.1964, on bark, *G.T. Johnson s.n.* (NY). CLARK CO.: along Little Missouri Relief, 7 mi NW of Prescott, 25.iv.1964, on bark, *G.T. Johnson s.n.* (NY). CLEVELAND CO.: near Moro Bayou, near Fordyce, 3.vii.1964, on bark, *G.T. Johnson 5836* (NY). COLUMBIA CO.: 5 mi N of Magnolia, 25.i.1960, on bark, *G.T. Johnson s.n.* (NY). FRANKLIN CO.: Ozark National Forest, Boston Mountain Ranger District, Shores Lake, 16.iv.2004, on *Acer*, *W.R. Buck 46698* (NY). GARLAND CO.: near Charlton Recreation Area, 20 mi W of Hot Springs, 18.x.1964, on bark, *G.T. Johnson s.n.* (NY). GRANT CO.: 4 mi S of Sheridan, 19.x.1964, on bark, *G.T. Johnson s.n.* (NY). JEFFERSON CO.: US270 12 mi E of Pine Bluff, 3.i.1953, on bark, *G.T. Johnson 1087* (NY). MONTGOMERY CO.: Along Little Missouri River 4 mi. N of Camp Albert, 19.iv.1956, on bark, *G.T. Johnson s.n.* (NY). PIKE CO.: along Cassatat River, 16 mi. SE of Mena, 19.iv.1955, on bark, *G.T. Johnson s.n.* (NY). POLK CO.: Ouachita National Forest, Caney Creek Wilderness Area, side ravine of Short Creek, 18.v.2000, on bark, *C.M. Wetmore 84271* (NY). UNION CO.: along US82, 9 mi W of El Dorado, 24.i.1958, on *Ilex*, *G.T. Johnson s.n.* (NY). **FLORIDA.** ALACHUA CO.: 7 mi NW of Gainesville, 4.ii.1965, on bark, *G.T. Johnson s.n.* (NY). BAY CO.: N of CR388 at Econfinia Creek, 1.xii.1994, on *Acer*, *R.C. Harris 35687* (NY). CALHOUN CO.: W of SR71, 6.6 mi N of Gulf County line, 11.xii.1993, on *Ilex*, *R.C. Harris 32172* (NY). CITRUS CO.: St. Martins Marsh Aquatic Preserve, 5.xii.1996, on *Carya*, *R.C. Harris 39769* (NY). COLLIER CO.: Fakahatchee Strand State Preserve, vicinity of Ranger Station, 4.iii.2009, on *Ficus*, *J.C. Lendemer 15510* (NY). DE SOTO CO.: along CR 760 at Peace River, 1.2 mi W of US 17 at Nocatee, 29.iii.1998, on *Fraxinus*, *R.C. Harris 41991* (NY). DIXIE CO.: Big Bend Wildlife Management Area, Jena Unit, 4.xii.1996, on *Ilex*, *R.C. Harris 39678* (NY). FLAGLER CO.: along Co. Rd. 304 at Sweetwater Creek, 6.i.1996, on *Acer*, *R.C. Harris 37413* (NY). GULF CO.: N of Lake Grove Rd./SR22, 1.5 mi E of SR71 at Wewahitchka, 11.xii.1993, on *Acer*, *R.C. Harris 32201* (NY). HAMILTON CO.: Holton Creek Wildlife Management Area, 14.xii.1993, on fallen *Carya* branch, *R.C. Harris 32470-D* (NY). HIGHLANDS CO.: Hickory Hammock, 28.iii.1998, on *Ilex*, *R.C. Harris 41940* (NY). LAKE CO.: Ocala National Forest, Alexander Springs Creek at end of FSR552, 6.xii.1988, on *Acer*, *W.R. Buck 16772* (NY). LEE CO.: Caloosahatchee River State Recreation Area, 10.xii.1992, on *Ilex*, *R.C. Harris 30241-A* (NY). LEVY CO.: Goethe State Forest, Sand Slough, 4.xii.1996, on *Ilex*, *R.C. Harris 39686* (NY). LIBERTY CO.: FL20 1.7 mi W of Hosford, 28.xii.1990, on bark, *R.C. Harris 26077* (NY). MADISON CO.: 0.3 mi on dirt road W of CR150, 7.7 mi NNE of US90, 14.xii.1993, on *Ilex*, *R.C. Harris 32348* (NY). MIAMI-DADE CO.: Cutler, Deering Hammock,

15.xii.1919, on bark, *N.L. Britton 723 & E.G. Britton* (NY). OSCEOLA CO.: Bull Creek Wildlife Management Area, 9.i.1996, on bark, *W.R. Buck 29194* (NY). POLK CO.: 3 mi S of Fort Meade, 2.ii.1965, on bark, *G.T. Johnson s.n.* (NY). PUTNAM CO.: Ocala National Forest, old Johnson Field Campground along Oklawaha River, 7.xii.1988, on *Carpinus*, *R.C. Harris 23695* (NY). SEMINOLE CO.: along Econlockhatchee River at Little-Big Econlockhatchee Canoe Launch, 10.i.1994, on *Carpinus*, *R.C. Harris 37724* (NY). SUMTER CO.: along CR330, 1.1 mi ENE of CR48, just SE of Citrus County line at Withlacoochee River, 5.xii.1996, on *Acer*, *R.C. Harris 39821* (NY). SUWANNEE CO.: Peacock Springs State Recreation Area, 2.xii.1996, on *Ilex*, *R.C. Harris 39385* (NY). TAYLOR CO.: along CR361, 1.7 mi N of Keaton Beach, 3.xii.1996, on *Acer*, *R.C. Harris 39653* (NY). UNION CO.: Worthington Springs, 4.xii.1994, on *Acer*, *R.C. Harris 35978* (NY). WALTON CO.: along Bruce Creek at FL81, 30.xi.1988, on *Carpinus*, *R.C. Harris 23159* (NY). **GEORGIA.** BIBB CO.: near Lizella, 3.ii.1967, on bark, *G.T. Johnson s.n.* (NY). BURKE CO.: Boggy Gut Creek tract, N of GA56 Spur/River Rd., 15.iii.2010, on *Carpinus*, *J.C. Lendemer 22211* (NY). CANDLER CO.: Fifteenmile Creek Preserve, 22.xii.2009, on *Fagus*, *J.C. Lendemer et al. 21711* (NY). COFFEE CO.: Broxton Rocks Ecological Preserve, 16–17.xii.1993, on *Quercus*, *R.C. Harris 32715* (NY). EARLY CO.: Williams Bluff Preserve, 14.iv.2007, on *Ilex*, *J.C. Lendemer et al. 9297* (NY). GREENE CO.: Oconee National Forest, end of FSR1202 off GA15, 19.ix.1996, on *Tilia*, *R.C. Harris 38863* (NY). LUMPKIN CO.: 4 mi E of Suches, 5.ii.1967, on bark, *G.T. Johnson s.n.* (NY). PUTNAM CO.: Eatonton Granite Outcrop, along W shore of Oconee Lake, 8.x.1999, on *Acer*, *R.C. Harris 43723* (NY). RABUN CO.: Lake Burton Wildlife Management Area, vicinity of Popcorn Overlook, 17.ix.2006, on *Acer*, *J.C. Lendemer et al. 7638* (NY). SCHLEY CO.: 4 mi N of Ellaville, 3.ii.1967, on bark, *G.T. Johnson s.n.* (NY). TREUTLEN CO.: Berry Hill Bluff, N-facing bluff along Dead River at confluence with Oconee River, 18.iii.1995, on bark, *W.R. Buck 27608* (NY). **LOUISIANA.** EAST BATON ROUGE PARISH: 1 mi N of Zachary, ii.1960, on bark, *G.T. Johnson 6001* (NY). JEFFERSON DAVIS PARISH: 2 mi SE of Hayes, 27.vi.1964, on bark, *G.T. Johnson s.n.* (NY). NATCHITOCHES PARISH: Kisatchie National Forest, Longleaf Trail Vista, 28.v.1976, on *Acer*, *R.C. Harris 11416* (NY). RAPIDES PARISH: Kisatchie National Forest, Magnolia Recreation Area, 31.xii.1969, on bark, *R.S. Egan 7366* (NY). ST. HELENA PARISH: 4 mi N of Chipola, 29.v.1979, on *Prunus*, *S.C. Tucker 18668* (NY). ST. JOHN THE BAPTIST PARISH: 4 mi W of Reserve, 23.xi.1968, on bark, *G.T. Johnson 6420* (NY). ST. MARTIN PARISH: Bayou Capucin, 22.x.1894, on *Acer*, *A.B. Langlois 991* (NY). ST. MARY PARISH: Chatsworth Levee, near Franklin, 12.ix.1975, on *Acer*, *W.R. Buck B-583* (NY). ST. TAMMANY PARISH: 10 mi E of Covington, 16.vi.1939, on bark, *G.T. Johnson 2700 & H.N. Andrews* (NY). TANGIPAHOA PARISH: 4 mi E of Robert, 16.vi.1939, on *Ilex*, *G.T. Johnson 3025 & H.N. Andrews* (NY). **MISSISSIPPI.** ADAMS CO.: 15 mi S of Natchez, 6.iv.1953, on bark, *G.T. Johnson 1219* (NY). AMITE CO.: 2 mi S of Coles, 6.iv.1953, on bark, *G.T. Johnson 1204* (NY). CARROLL CO.: 18 mi E of Greenwood, 3.i.1953, on bark, *G.T. Johnson 1074* (NY). COPIAH CO.: 5 mi N of Wesson, 11.vi.1939, on bark, *G.T. Johnson 2352 & H.N. Andrews* (NY). DE SOTO CO.: ~4 mi E of Penton, 8.vi.1939, on bark, *G.T. Johnson 3377 & H.N. Andrews* (NY). FRANKLIN CO.: Clear Springs Campground WSW of Meadeville, 3.vi.1976, on *Carya*, *R.C. Harris 11520* (NY). HINDS CO.: 3 mi N of Terry, 11.vi.1939, on bark, *G.T. Johnson 2378 & H.N. Andrews* (NY). HOLMES CO.: 7 mi NW of Lexington, 10.vi.1939, on bark, *G.T. Johnson 2266* (NY). JASPER CO.: Bienville National Forest, along CR506 at Little Tallahala Creek, 30.ix.1992, on *Fagus*, *R.C. Harris 28825* (NY). JEFFERSON CO.: MS20 6 mi E of Fayette, 5.iv.1953, on bark, *G.T. Johnson 1224* (NY). ITAWAMBA CO.: Donivan Slough, 28.ix.1992, on *Fagus*, *R.C. Harris 28614* (NY). LAMAR CO.: 17 mi W of Hattiesburg, 7.iv.1953, on *Acer*, *G.T. Johnson 1180[B]* (NY). LAUDERDALE CO.: 1 mi SE of Collinsville, 9.iv.1953, on bark, *G.T. Johnson 1094* (NY). LEE CO.: near Tupelo, 31.xii.1952, on bark, *G.T. Johnson 1046A* (NY). MARION CO.: 5 mi NE of Columbia, 17.vi.1939, on bark, *G.T. Johnson 2775 & H.N. Andrews* (NY). NOXUBEE CO.: 1 mi S of Shugualak, 19.vi.1939, on bark, *G.T. Johnson 3009 & H.N. Andrews* (NY). PEARL RIVER CO.: 10 mi E of Poplarville, 14.vi.1939, on bark, *G.T. Johnson 1107 & H.N. Andrews* (NY). PERRY CO.: 2 mi E of Mahned, 7.iv.1953, on bark, *G.T. Johnson 1139* (NY). PIKE CO.: along Bogue Chito River, 11 mi SE of McComb, 7.iv.1953, on bark, *G.T. Johnson 1171* (NY). SCOTT CO.: Bienville National Forest, Bienville Pines Scenic Area, 29.ix.1992, on *Carya*, *R.C. Harris 28703* (NY). SHARKEY CO.: Delta National Forest, along Rd. #706, 6 mi N of Holly Bluff, 27.xii.1978, on bark, *G.T. Johnson s.n.* (NY). WARREN CO.: 12 mi N of Port Gibson, 5.iv.1953, on bark, *G.T. Johnson 1239* (NY). WAYNE CO.: 12 mi NW of Waynesboro, 8.iv.1953, on bark, *G.T. Johnson 1163* (NY). WILKINSON CO.: Clark Creek Natural Area, 5.iv.1982, on bark, *J. Pruski 2559* (NY). YALOBUSHA CO.: 1 mi S of Oakland, 21.vi.1939, on bark, *G.T. Johnson 2958 & H.N. Andrews* (NY). **NORTH CAROLINA.** BRUNSWICK CO.: Bald



Head Island, Bald Head Island Research Reserve, 21.xi.2013, on *Carpinus*, J.C. Lendemer 39897 & J.W. Barton (NY). CAMDEN CO.: North River Game Land, N of Indian Island Rd./Sassafras Lane, 15.iv.2012, on *Carpinus*, J.C. Lendemer et al. 31255 (NY). CARTERET CO.: Croatan National Forest, 3 mi S of NC101 and North Harlow, 6.iii.2013, on *Acer*, J.C. Lendemer et al. 35399 (NY). COLUMBUS CO.: Columbus County Game Land, Slap Swamp, 18.ix.2013, on *Acer*, J.C. Lendemer et al. 39391 (NY). CRAVEN CO.: Croatan National Forest, Still Gut 0–0.5 mi SW of FS3046/Hope Rd., 6.iii.2013, on *Acer*, L. Gibbons et al. 169 (NY). DARE CO.: Cape Hatteras National Seashore, trail from World War II memorial, 24.iii.2014, on *Myrica*, J.C. Lendemer et al. 43184 (NY). FRANKLIN CO.: 2 mi W of Bunn, 21.viii.1966, on bark, G.T. Johnson s.n. (NY). GASTON CO.: Tryon, 25.ii.1899, on bark, H.A. Green s.n. = *Lich. Bor.-Amer.* 254 (NY). GATES CO.: Great Dismal Swamp National Wildlife Refuge, W side of Sherrill Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 30983 (NY). GRAHAM CO.: Nantahala National Forest, Slickrock Wilderness Area, trail to Slickrock Creek along Lake Caulderwood, 3.x.1987, on *Cornus*, R.C. Harris 20925 (NY). HENDERSON CO.: Pisgah National Forest, North Mills River Recreation Area, 30.iv.2006, on *Acer*, J.C. Lendemer et al. 7108 (NY). JONES CO.: Croatan National Forest, FS134/Holston Hunter Rd. at Holston Creek, 5.iii.2013, on *Acer*, L. Gibbons et al. 91 (NY). MACON CO.: Nantahala National Forest, along Buck Creek Rd./CR1535, 5.x.1997, on *Carpinus*, R.C. Harris 41338 (NY). NASH CO.: along Tar River, 3 mi SW of Spring Hope, 21.viii.1966, on bark, G.T. Johnson s.n. (NY). ONSLOW CO.: Hammocks Beach State Park, NE end of Huggins Island, 25.x.2013, on *Celtis*, J.C. Lendemer et al. 38653 (NY). PASQUOTANK CO.: Great Dismal Swamp National Wildlife Refuge, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 31041 (NY). PENDER CO.: Holly Shelter Game Land, Trumpeter Swamp N of Blossom Creek, 27.x.2013, on *Acer*, J.C. Lendemer et al. 39045 (NY). SWAIN CO.: Great Smoky Mountains National Park, Sunkota Ridge Trail between Martins Gap and S spur trail to Indian Creek Trail, 21.vi.2011, on *Liriodendron*, J.C. Lendemer 29397 & N. Davoodian (NY). TRANSYLVANIA CO.: Gorges State Park, E facing drainage of the Toxaway River, ~0.5 km E of Indian Camp Rd., 10.viii.2005, on *Acer*, J.C. Lendemer 4534 & E. Tripp (NY). TYRRELL CO.: Pocosin Lakes National Wildlife Refuge, 0–0.4 mi N of Bodwell Rd., 23.iii.2013, on *Acer*, J.C. Lendemer et al. 36580 (NY). **OKLAHOMA.** McCURTAIN CO.: Beaver's Bend State Park, 9.viii.1965, on bark, G.T. Johnson 6297[A] (NY). **SOUTH CAROLINA.** AIKEN CO.: Savannah River Bluffs Heritage Preserve, 13.iii.2010, on bark, W.R. Buck 56116 (NY). BERKELEY CO.: Francis Marion National Forest, along FSR110/Walleye Rd., E of Walleye Bay, 5.xii.2013, on *Carya*, R.C. Harris 59950 (NY). CHARLESTON CO.: Francis Marion National Forest, E shores of Wambaw Creek floodplain, E of boundary of Wambaw Creek Wilderness, 2.xii.2013, on *Carpinus*, J.C. Lendemer et al. 40596 (NY). COLLETON CO.: Donnelley Wildlife Management Area, Lodge Rd. 0.2 mi N of Lodge, 18.xii.2013, on fallen *Ilex*, J.C. Lendemer et al. 41773 (NY). CLARENDON CO.: 2 mi W of Turbeville, 29.i.1967, on bark, G.T. Johnson s.n. (NY). DARLINGTON CO.: Oaklyn Plantation, 10.v.2008, on *Celtis*, G.B. Perlmutter et al. 1484 (NY). FLORENCE CO.: Pee Dee River Basin, Back Swamp, 10.v.2008, on *Ilex*, G.B. Perlmutter et al. 1588 (NY). MARION CO.: 8 mi SE of Gresham, 29.i.1967, on bark, G.T. Johnson s.n. (NY). PICKENS CO.: along Eastatoe Creek ~2.5 mi SW of Rocky Botton, 27.ix.1989, on *Carya*, R.C. Harris 24753 (NY). SUMTER CO.: near Statesburg, 28.i.1967, on bark, G.T. Johnson s.n. (NY). **TENNESSEE.** ANDERSON CO.: 5 mi NW of Oliver Springs, 4.ix.1960, on *Acer*, G.T. Johnson s.n. (NY). BLOUNT CO.: Great Smoky Mountains National Park, ~2 mi NE of Happy Valley, 30.vi.2010, on *Acer*, R.C. Harris 56390 (NY). POLK CO.: Cherokee National Forest, along FSR62 at Sheeds Creek, 5.x.1998, on *Carpinus*, R.C. Harris 42507 (NY). WHITE CO.: 5 mi E of Sparta, 10.ix.1960, on bark, G.T. Johnson 6030 (NY). **TEXAS.** CHEROKEE CO.: along Neches River, 8 mi SW of Alto, 19.vii.1965, on bark, G.T. Johnson 6300[A] (NY). GONZALES CO.: 2 mi S of Thompsonville, 12.vii.1966, on bark, G.T. Johnson s.n. (NY). HARRIS CO.: 2 mi E of Humble, 11.vii.1965, on bark, G.T. Johnson s.n. (NY). HOUSTON CO.: along White Rock Creek, 10 mi SE of Crockett, 10.vii.1965, on bark, G.T. Johnson s.n. (NY). LIBERTY CO.: near Rye, 11.vii.1965, on bark, G.T. Johnson s.n. (NY). POLK CO.: Big Thicket National Preserve, Big Sandy Creek Unit, 30.x.1976, on bark, R.S. Egan 9367 (NY). TYLER CO.: Big Thicket National Preserve, Beech Creek Unit, 1.iv.1978, on bark, R.S. Egan 11279 (NY). WAKLER CO.: 4 mi E of Huntsville, 10.vii.1965, on bark, G.T. Johnson s.n. (NY). **VIRGINIA.** SUFFOLK CITY: Dismal Swamp National Wildlife Refuge, Railroad Ditch  $\frac{3}{4}$  mi E of entrance on Desert Rd., 12.xii.2009, on *Acer*, J.C. Lendemer 20394 & B.P. Hodkinson (NY).



**Figure 11.** Geographic distribution of *Pyrenula pseudobufonia* in eastern North America based on specimens examined for this study.

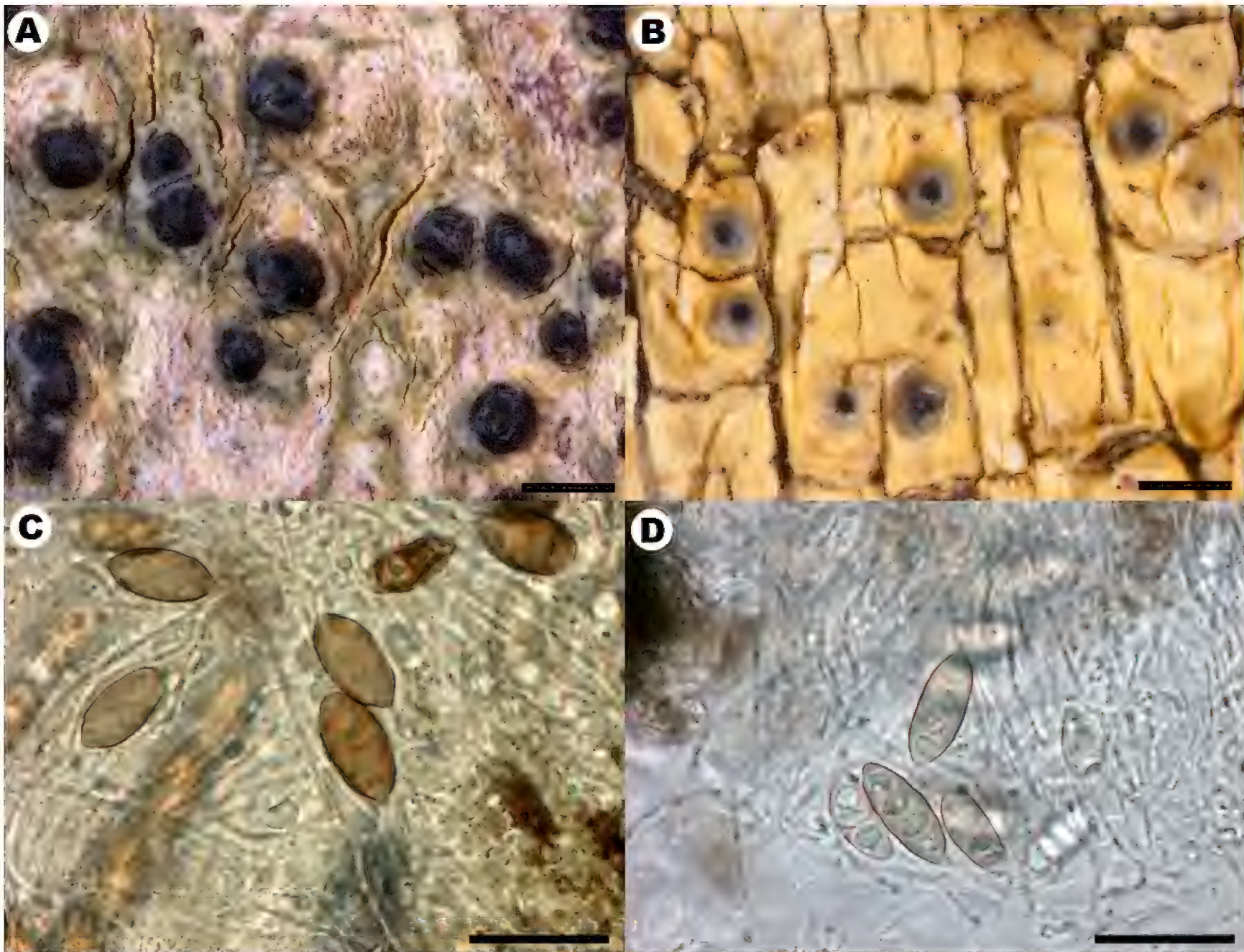
**NOTE IX – *PYRENULA SHIRABEICOLA* IS NOT CONSPECIFIC WITH *P. PSEUDOBUFONIA***

*Pyrenula shirabeicola* Kurok. & S. Nakan, Mem. Natn. Sci. Mus., Tokyo, 4: 67. 1971. **TYPE: JAPAN.** HONSHU. PROV. HIDA: Mt. Ontake, 1900–2000 m., 13.viii.1964, on trunk of *Abies veitchii*, S. Kurokawa 64172 = *Lich. Rar. Crit. Exs. No. 188* (TNS!, holotype; NY!, isotype).

Discussion. – When NY recently received material of the type collection of *Pyrenula shirabeicola*, we examined the disposition of this name as part of routine curation of the specimen. Aptroot (2012) proposed *P. shirabeicola* as a synonym of *P. pseudobufonia* (Rehm) R.C. Harris, the latter being a common species in eastern North America (Figure 11). The ascospores of *P. pseudobufonia* are distinctive in having the terminal locules appressed to the spore wall (Figure 12D). Those in the isotype and holotype of *P. shirabeicola* are not of this type however (Figure 12C). Additionally, while both *P. shirabeicola* and *P. pseudobufonia* are UV+ bright yellow due to the presence of lichexanthone, the hymenium in *P. shirabeicola* is I- and is not inspersed while that of *P. pseudobufonia* is I+ bluish and densely inspersed with oil. Given the morphological differences outlined above it seems best to maintain *P. shirabeicola* described by Kurokawa and Nakanishi (1971) from Japan, as distinct from *P. pseudobufonia*.

*Selected comparative material of Pyrenula pseudobufonia* examined. – **CANADA. NEW BRUNSWICK.** ALBERT CO.: Fundy National Park, East Branch Trail, 25.ix.2013, on *Fagus*, R.C. Harris 58939 (NY). CHARLOTTE CO.: Grans Falls Flowage on Sat. Croix River, 30.iv.2011, on *Fagus*, J.C. Lendemer 27841 (NY). **NOVA SCOTIA.** COLCHESTER CO.: Economy River Wilderness Area, Kenomee Canyon Trail, 14.v.2004, on *Acer*, R.C. Harris 49743 (NY). **QUEENS CO.:** Thomas H. Raddall Provincial Park, Moody Barrens, 7.v.1999, on *Quercus*, R.C. Harris 42877 (NY). **SHELBURNE CO.:** along Hwy. 302 just S of Upper Ohio, 9.v.1999, on *Acer*, R.C. Harris 43060 (NY). **ONTARIO:** Ottawa, 9.ix.1891, on *Fagus*, J. Macoun 536 (NY). **BRUCE CO.:** Fathom Five National Marine Park, Flowerpot Island, 22.ix.2008, on *Acer*, J.C. Lendemer 14485 (NY). **PEEL CO.:** N of Palgrave, 17.ix.1946, on *Fagus*, R.F. Cain 26694 (NY). **U.S.A. ALABAMA.** CLEBURNE CO.: 2 miles NE of Heflin, 32.x.1964, G.T. Joh-





**Figure 12.** Comparison between *Pyrenula shirabeicola* (B and D, both from isotype at NY) and *P. pseudobufonia* (A from Harris 38541 and C from Harris 38604). A, gross morphology of thallus and perithecia of *P. pseudobufonia*. B, ascospores of *P. pseudobufonia*. C, gross morphology of thallus and perithecia of *P. shirabeicola*. D, ascospores of *P. shirabeicola*. Scales = 1.0 mm in A and B, 20  $\mu$ m in C and D.

-nson s.n. (NY). ESCAMBIA CO.: Conecuh National Forest, US29 just E o McGowan Bridge, 13.iv.2007, on *Quercus*, J.C. Lendemer et al. 9366 (NY). LEE CO.: Auburn, 18.iii.1897, on *Quercus*, F.S. Earle & C.F. Baker s.n. (NY). MARENGO CO.: along Sweetwater Creek, 1 mi SE of Sweetwater, 20.x.1964, G.T. Johnson s.n. (NY). MORGAN CO.: SW Decatur, near San Souci Cave entrance, 21.viii.2012, on *Quercus*, E. Tripp 3759 & L. Tripp (NY). TUSCALOOSA CO.: near Rickey, 24.x.1964, G.T. Johnson s.n. (NY). **ARKANSAS.** BAXTER CO.: Ozark National Forest, Leatherwood Wilderness, W of AR341, 18.iv.2005, on *Quercus*, R.C. Harris 51198 (NY). BENTON CO.: Hobbs State Park-Conservation Area, along Page Sawmill Rd., 17.iv.2004, on *Quercus*, R.C. Harris 49416 (NY). BRADLEY CO.: along Saline River, 4 mi N of Warren, 19.x.1964, G.T. Johnson s.n. (NY). CARROLL CO.: 10 mi W of Eureka Springs, 24.iv.1954, on *Quercus* (NY). CRAWFORD CO.: Ozark National Forest, along small stream just upstream from Cold Springs Lake, 15.iv.2004, on *Acer*, R.C. Harris 49136 (NY). FRANKLIN CO.: Ozark National Forest, Boston Mountain Ranger District, Shore Lake, 17.x.2005, on *Quercus*, R.C. Harris 51766 (NY). GARLAND CO.: Ouachita National Forest, W side of North Fork of Ouachita River, ~0.1 mi S of AR298, 6.x.2010, on *Quercus*, J.C. Lendemer et al. 26166 (NY). IZARD CO.: NE corner of Devil's Knob-Devil's Backbone Natural Area, 24.x.2001, on *Quercus*, R.C. Harris 45326 (NY). JEFFERSON CO.: Pine Bluff Arsenal, 2.xii.1999, on *Quercus* branch, D. Ladd 22012 & M. Pederson (NY). LAWRENCE CO.: Shirey Bay-Rainey Brake Wildlife Management Area, 29.iii.2006, on *Quercus*, W.R. Buck 50035 (NY). MADISON CO.: Madison County Wildlife Management Area, 2.xi.2000, on *Quercus*, R.C. Harris 44655 (NY). MONTGOMERY CO.: along Little Missouri River, 4 mi N of Camp Albert, 19.iv.1956, G.T. Johnson s.n. (NY). NEWTON CO.: Ozark National Forest, Boston Mountains, Alum Cove Recreation Area, 24.iv.1988, W.R. Buck 15804 (NY). PIKE CO.: along Cassatat River, 16 mi SE of Athens,



19.iv.1955, on *Quercus*, *G.T. Johnson s.n.* (NY). POPE CO.: Ozark National Forest, Kings Bluff, 7.xi.2002, on *Quercus*, *W.R. Buck 43070* (NY). SEARCY CO.: Buffalo National River, Tyler Bend, 17.iv.2005, on *Quercus*, *R.C. Harris 40986* (NY). SHARP CO.: Harold E. Alexander Wildlife Management Area, 25.x.2001, on *Quercus*, *R.C. Harris 45609A* (NY). STONE CO.: Hell Creek Natural Area, 8.x.2010, on *Quercus*, *J.C. Lendemer 26419 & D. Ladd* (NY). **CONNECTICUT.** LITCHFIELD CO.: Great Mountain Forest, Sam Yankee Woodlot, 20.ix.2003, on *Quercus*, *W.R. Buck 45000* (NY). NEW HAVEN CO.: West Rock, New Haven, 23.v.1914, on *Quercus*, *W.C. Barbour 30* (NY). **DELAWARE.** SUSSEX CO.: Cape Henlopen State Park, 27.iv.2012, on *Acer*, *J.C. Lendemer 32054 & B.P. Hodgkinson* (NY). **FLORIDA.** BRADFORD CO.: along CR235, 2.7 mi SW of FL100, 3.xii.1994, on *R.C. Harris 35927* (NY). CITRUS CO.: St. Martins Marsh Aquatic Preserve along CR44, 5.xii.1996, on *Quercus*, *R.C. Harris 39775* (NY). CLAY CO.: Gold Head Branch State Park, 28.xi.1992, on *Quercus*, *R.C. Harris 29168* (NY). COLUMBIA CO.: Osceola National Forest, W of FSR237, 15.xii.1993, on *Quercus*, *R.C. Harris 32551-A* (NY). ESCAMBIA CO.: along CR99A at Brushy Creek, 8.xii.1993, on *Quercus*, *R.C. Harris 31889A* (NY). GILCHRIST CO.: Waccasassa Flats, 5.xii.1993, on *Quercus*, *R.C. Harris 31725* (NY). MANATEE CO.: Upper Myakka River Watershed, on Taylor Rd. at Myakka River, 29.iii.1998, on *Quercus*, *R.C. Harris 42043* (NY). PUTNAM CO.: Crescent City, *G.W. Martin 37* (NY). SUWANNEE CO.: Little River Sink, N of 200<sup>th</sup> St., 5.xii.1994, on *Quercus*, *R.C. Harris 36049* (NY). UNION CO.: Worthington Springs, 4.xii.1994, on *Quercus*, *R.C. Harris 35981* (NY). WAKULLA CO.: Apalachicola National Forest, CR368, 3.6 mi NW of jct w/ US319, 31.xii.1990, on *Quercus*, *R.C. Harris 26179* (NY). WALTON CO.: on N side of US90 ~1 mi W of jct w/ FL285, 30.xi.1988, on *Quercus*, *R.C. Harris 23118* (NY). **GEORGIA.** BRYAN CO.: Richmond Hill Wildlife Management Area, 4.ii.2012, on *Quercus*, *M.F. Hodges 7951* (NY). CANDLER CO.: Fifteenmile Creek Preserve, 22.xii.2009, on *Quercus*, *J.C. Lendemer et al. 21687* (NY). CLINCH CO.: Score Bridge Road swamp, 11.xii.2011, on *Quercus*, *M.F. Hodges 7848* (NY). COWETA CO.: 3 mi NW of Digbey, 22.x.1964, *G.T. Johnson s.n.* (NY). EFFINGHAM CO.: Craig Barrow farm, 3.iii.2012, on *Quercus*, *M.F. Hodges 8203* (NY). EMANUEL CO.: Ochopee Dunes Natural Area, McLeod Bridge tract, 19.xii.2009, on *Quercus*, *J.C. Lendemer 21329 & S.Q. Beeching* (NY). GLYNN CO.: E of Brunswick, St. Simons Island, 30.xii.1976, *R.S. Egan 9673* (NY). GREENE CO.: Oconee National Forest, end of FSR1202, 19.ix.1996, on *Quercus*, *W.R. Buck 30620* (NY). LONG CO.: Griffin Ridge Wildlife Management Area, 5.ii.2012, on *Quercus*, *M.F. Hodges 8140* (NY). PUTNAM CO.: 6 mi SW of Eatonton, 4.ii.1967, *G.T. Johnson s.n.* (NY). RABUN CO.: Chattahoochee National Forest, Rabun Bald, 4.x.1997, on *Acer*, *R.C. Harris 41252* (NY). TOWNS CO.: Chattahoochee National Forest, Hightower Gap to Rich Knob, 11.xi.2007, on *Acer*, *J.C. Lendemer et al. 10887* (NY). TREUTLEN CO.: Berry Hill Bluff, along Dead River, 18.iii.1995, *W.R. Buck 27609* (NY). WILKINSON CO.: along US441, 2.2 mi S of Commissioner Creek, 19.ix.1996, on *Quercus*, *R.C. Harris 38854* (NY). **ILLINOIS.** COOK CO.: Glencoe, 11.xi.1905, on *Acer*, *W.W. Calkins 236* (NY). UNION CO.: Shawnee National Forest, Panther Den, 17.x.1993, on *Acer*, *R.C. Harris 31438* (NY). **INDIANA.** PUTNAM CO.: Fern, 1893, *L.M. Underwood 3* (NY). **KANSAS.** CHEROKEE CO.: 4 mi E of Baxter Springs, 24.iv.1954, on *Quercus*, *C.L. Kramer 379* (NY). **KENTUCKY.** BATH CO.: Daniel Boone National Forest, Stoney Cove Recreation Area, 10.x.1995, on *Fagus*, *R.C. Harris 36920* (NY). LECTHER CO.: adjacent to upper section of Bad Branch Nature Preserve, 14.ix.1991, on *Quercus*, *R.C. Harris 27104* (NY). PERRY CO.: Daniel Boone National Forest, Old Field Branch of Leatherwood Creek, 6.x.2001, on *Fagus*, *R.C. Harris 44948* (NY). **LOUISIANA.** ASCENSION PARISH: along Bayou Manchac, 30.vi.1964, *G.T. Johnson 5724* (NY). EAST BATON ROUGE PARISH: Burden Plantation, Essen Lane, 5.i.1982, *S.C. Tucker 21948* (NY). EAST FELICIANA PARISH: Idlewild Experimental Station, 16.iii.1979, on hardwood, *S.C. Tucker 18483* (NY). NATCHITOCHES PARISH: Longleaf Trail Vista, 28.v.1976, on *Quercus*, *R.C. Harris 11453* (NY). **MAINE.** HANCOCK CO.: Lead Mountain, on *Fagus*, *W.R. Buck 52266* (NY). KNOX CO.: Camden Hills State Park, 29.v.2009, on *Quercus*, *R.C. Harris 55565* (NY). OXFORD CO.: Canton Point, 4.v.1934, on *Fagus*, *J.C. Parlin 11980* (NY). WALDO CO.: Ducktrap River Preserve, ~4 mi NE of Lincolnville Center, 28.v.2009, on *Quercus*, *W.R. Buck 54861* (NY). YORK CO.: Massabesic Experimental Forest, South Unit, 6.vi.2010, on *Quercus*, *J.C. Lendemer 22572* (NY). **MARYLAND.** BALTIMORE CO.: path to Fox Run, 20.xi.1906, on *Quercus*, *C.C. Plitt 70A* (NY). DORCHESTER CO.: Horns Point, NW of Cambridge, 24.iii.1962, on bark, *C.F. Reed 54618* (NY). FREDERICK CO.: Mt. Catoctin Park, Cunningham Falls, 10.vi.1977, on bark, *E.G. Worthley s.n.* (NY). WASHINGTON CO.: Pleasant Valley Rd. at Rt. 77, Catoctin Mts., 28.iv.1962, on bark, *C.F. Reed 55598* (NY). WICOMICO CO.: Nassawango Creek TNC Preserve, Wicomico-2 Tract, 16.x.2013, on *Quercus*, *J.W. Barton et al. 163* (NY). WORCESTER CO.: Pocomoke State Forest, Corker Creek 0.35 mi SE of US113 bridge, 15.xi.2012, on *Acer*, *J.C. Lendemer et*



*al.* 33950 (NY). **MASSACHUSETTS.** BERKSHIRE CO.: Mt. Greylock State Reservation, W slope of Mt. Fitch, 8.v.1995, *W.R. Buck* 27770 (NY). ESSEX CO.: Manchester, 6.iv.1887, *W.G. Farlow s.n.* (NY). FRANKLIN CO.: Sunderland, 22.ii.1918, on *Quercus*, *H.B. Peirson s.n.* (NY). MIDDLESEX CO.: Cambridge, *E. Tuckerman s.n.* (NY). PLYMOUTH CO.: Halifax, iv.1898, *C.A. King s.n.* (NY). WORCESTER CO.: Worcester, 1887, *G.E. Stone s.n.* (NY). **MICHIGAN.** CHEBOYGAN CO.: S of Riggsville Rd., W or UMBS entrance, 23.vii.1974, on *Quercus*, *W.R. Buck s.n.* (NY). EMMET CO.: Readmond Park near Good Hart, 8.vii.1969, on *Quercus*, *M. Gaudreau s.n.* (NY). IOSCO CO.: Iargo Springs, 19.ix.1965, on *Quercus*, *R.C. Harris* 834 (NY). WASHTENAW CO.: W of Embury Rd., SE of South Lake, 2.ii.1975, on *Fagus*, *W.R. Buck s.n.* (NY). **MINNESOTA.** BLUE EARTH CO.: Mankato, 1.vii.1899, on bark, *J.R. Gardner* 100 (NY). **MISSISSIPPI.** ADAMS CO.: 15 mi S of Natchez, 6.iv.1953, *G.T. Johnson* 1214 (NY). AMITE CO.: along MI24, 3 mi W of Liberty, 6.iv.1953, *G.T. Johnson* 1197A (NY). FOREST CO.: 13 mi SE of Hattiesburg, 7.iv.1953, *G.T. Johnson* 1126A (NY). FRANKLIN CO.: Clear Springs Campground, WSW of Meadeville, 3.vi.1976, *R.C. Harris* 11544 (NY). GEORGE CO.: Wyatt Hills, 18.viii.1954, on *Fagus*, *D. Demaree* 35786 (NY). HOLMES CO.: 10 mi N of Tchula, 10.vi.1939, *G.T. Johnson* 2258 (NY). JEFFERSON CO.: MI20 6 mi E of Fayette, 5.iv.1953, *G.T. Johnson* 1226 (NY). LAUDERDALE CO.: 1 mi SE of Collinsville, 9.ix.1953, *G.T. Johnson* 1095A (NY). LEE CO.: near Tupelo, 31.xii.1952, *G.T. Johnson* 1046 (NY). LOWNDES CO.: along US45, 11 mi N of Columbus, 31.xii.1952, *G.T. Johnson* 1051 (NY). MONTGOMERY CO.: 1 mi E of Stewart, 2.i.1953, *G.T. Johnson* 1014 (NY). NESHOMA CO.: 10 mi W of Philadelphia, 9.iv.1953, *G.T. Johnson* 1114 (NY). NOXUBEE CO.: 1 mi S of Shugualak, 19.iv.1939, *G.T. Johnson* 3009 (NY). OKTIBBEHA CO.: along US82, 6 mi W of Starkville, 2.i.1953, *G.T. Johnson* 1008 (NY). MARSHALL CO.: 8 mi S of Holly Springs, 30.xii.1952, *G.T. Johnson* 1001 (NY). PEARL RIVER CO.: 1 mi N of Carriere, 14.vi.1939, *G.T. Johnson* 1121 & *H.N. Andrews* (NY). PIKE CO.: 7 mi SE of McComb, 7.iv.1953, *G.T. Johnson* 1191A (NY). SHARKEY CO.: Delta National Forest, FSR707 9 mi NE of Valley Park, vii.1978, *G.T. Johnson s.n.* (NY). STONE CO.: near Perkinston, xii.1938, *G.T. Johnson* 3346 (NY). WARREN CO.: 12 mi N of Port Gibson, 5.iv.1953, *G.T. Johnson* 1246 (NY). WEBSTER CO.: 2 mi W of Mathisen, 2.i.1953, *G.T. Johnson* 1010 (NY). WILKINSON CO.: 2 mi W of Centreville, 6.iv.1953, *G.T. Johnson* 1208 (NY). **MISSOURI.** BARRY CO.: Mark Twain National Forest, Piney Creek Wilderness, 27.iii.2006, on *Quercus*, *R.C. Harris* 52193 (NY). BENTON CO.: Brickley Hollow Access, N of small unnamed road 0.1 mi W of Lake Rd. H-25, 15.iv.2005, on *Quercus*, *R.C. Harris* 50859 (NY). BOLLINGER CO.: Castor River Conservation Area, along CR702, 22.x.2001, on *Quercus*, *W.R. Buck* 40107 (NY). BUTLER CO.: Mark Twain National Forest, Mud Creek Natural Area, S of FSR3101/CR517, 16.x.2003, on bark, *C. Gueidan* 1049 (NY). CARTER CO.: Mark Twain National Forest, vicinity of Big Barren Creek Natural Area, 9.x.2010, on *Acer*, *J.C. Lendemer* 26601-A & *D. Ladd* (NY). CHRISTIAN CO.: Mark Twain National Forest, S of Chadwick Rd. at jct of Monarch Rd., 21.v.2003, *R.C. Harris* 47628 (NY). CRAWFORD CO.: Blue Springs Creek Conservation Area, N of CR-N, 28.x.2000, on *Acer*, *R.C. Harris* 44123 (NY). DENT CO.: Indian Trail Conservation Area, W of MNR Rd. 1019, 3.xi.2004, on *Quercus*, *R.C. Harris* 50157 (NY). DOUGLAS CO.: Mark Twain National Forest, Dimcher Hollow, 18.iv.1997, *W.R. Buck* 32068 (NY). FRANKLIN CO.: Little Indian Creek Conservation Area, S of Little Indian Creek Rd., 18.v.2003, on *Quercus*, *W.R. Buck* 44312 (NY). GASCONADE CO.: Canaan Conservation Area, vicinity of parking area at end of Bock Rd./CR434, 25.iii.2006, on *Quercus*, *J.C. Lendemer et al.* 6060 (NY). HOWARD CO.: Hungry Mother Conservation Area, along CR127, 14.iv.2005, on *Quercus*, *R.C. Harris* 50692 (NY). HOWELL CO.: White Ranch Conservation Area, N of MO142 at terminus of trail 11, 10.vi.2000, *W.R. Buck* 37500 (NY). JEFFERSON CO.: Valley View Glades Natural Area, N of MO-B, 18.x.200, on bark, *C. Gueidan* 1022 (NY). LACLEDE CO.: Bear Creek Conservation Area, E of Rustic Drive, 4.xi.2002, on *Quercus*, *R.C. Harris* 46631A (NY). MARIES CO.: Spring Creek Gap Conservation Area, E of CR340/Old Hwy. 63, 4.xi.2002, on *Quercus*, *R.C. Harris* 46552 (NY). MONTGOMERY CO.: NW corner of Danville Conservation Area, Danville Glades Natural Area, 27.x.2001, on *Quercus*, *R.C. Harris* 45727 (NY). OREGON CO.: Mark Twain National Forest, McCormack Lake Recreation Area, 26.iv.1988, *W.R. Buck* 15900 (NY). OZARK CO.: Mark Twain National Forest, along ridge E of Waterhole Hollow, 19.v.2003, on *Quercus*, *R.C. Harris* 47419 (NY). REYNOLDS CO.: Johnson Shut-Ins State Park, along East Fork Black River E of CR-N, 9.x.1997, on *Quercus*, *R.C. Harris* 41357 (NY). RIPLEY CO.: Mudpuppy Conservation Area, 0–1 mi NW of MO-BB, 17.x.2003, on bark, *C. Gueidan* 920 (NY). SAINT FRANCOIS CO.: St. Francois State Park, Coonville Creek Wild Area, Mooner's Hollow Trail, 19.iv.1997, on *Quercus*, *W.R. Buck* 32093 (NY). SHANNON CO.: MOFEP site 2, Carrs Creek State Forest, 12.iii.1996, on *Quercus*, *D. Ladd* 19611 (NY). STONE CO.: Ashe Juniper Natural Area, 15.x.2005, on

*Acer*, R.C. Harris 51676 (NY). TANEY CO.: Boston Ferry Conservation Area, E of CR 65-70B/Shary View Rd., 5.xi.2002, on *Quercus*, R.C. Harris 46769 (NY). TEXAS CO.: Gist Ranch Conservation Area, N of Ranch Rd., 4.xi.2004, on *Quercus*, R.C. Harris 50281 (NY). WASHINGTON CO.: Hughes Mountain Conservation Area, E of CR540, 3.xi.2002, *A. Amtoft* 334B (NY). WAYNE CO.: Sam A. Baker State Park, Shut-Ins Trail, 15.x.2003, on dead *Quercus*, W.R. Buck 45361 (NY). **NEW HAMPSHIRE**. GRAFTON CO.: Plymouth, viii.1893, on *Fagus*, C.E. Cummings s.n. = *Dec. N. Amer. Lich.* 150 (NY). **NEW JERSEY**. BERGEN CO.: Closter, 1876, C.F. Austin 714 (NY). BURLINGTON CO.: Wharton State Forest, Washington, 1.vii.2003, on *Quercus*, J.C. Lendemer et al. 999 (NY). CAPE MAY CO.: Belleplain State Forest, ~1.25 mi W of jct of NJ550[spur] and Cedar Bridge Rd., 3.ii.2009, on *Quercus*, J.C. Lendemer 15283 (NY). CUMBERLAND CO.: Bear Swamp West, 0.2 mi E of NS trail at point ~0.4 mi SE of Ackley Rd./CR718, 17.ii.2012, on large *Fagus*, B.P. Hodgkinson et al. 18055 (NY). GLOUCESTER CO.: Newfield, iv.1888, on *Quercus*, J.B. Ellis s.n. (NY). OCEAN CO.: Manahawkin Wildlife Management Area, S of Stafford Ave., 2.xii.2009, on *Quercus*, J.C. Lendemer 20073 (NY). PASSAIC CO.: Skylands, 4.vii.1917, on *Quercus*, N.L. Britton 14 (NY). **NEW YORK**. GREENE CO.: Catskill Park, Blackhead Range Trail, 13.v.1996, on *Fagus*, R.C. Harris 38604 (NY). HAMILTON CO.: Long Point, Raquette Lake, 6.ix.1986, on *Fagus*, R.C. Harris 19351 (NY). ONEIDA CO.: Taberg, v.1887, L.M. Underwood s.n. (NY). ST. LAWRENCE CO.: Cranberry Lake Campground, along trail to Bear Mountain, 22.ix.1983, on *Fagus*, W.R. Buck 9645 (NY). ONONDAGA CO.: Jamesville, x.1887, O.F. Cusick s.n. (NY). SUFFOLK CO.: Greenport, 3.v.1915, on *Fagus*, R. Latham s.n. (NY). ULSTER CO.: trail to Giant Ledge from Giant Ledge parking lot on CR47, 10.v.1993, on *Fagus*, R.C. Harris 30498 (NY). WASHINGTON CO.: Fort Edward, 1867, E.C. Howe s.n. (NY). YATES CO.: Penn Yan, H.P. Sartwell s.n. (NY). **NORTH CAROLINA**. CAMDEN CO.: Dismal Swamp State Park, Western Boundary Ditch, S of int w/ Corapeake Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 30910 (NY). CARTERET CO.: Croatan National Forest, 3 mi S of NC101 and North Harlow, 6.iii.2013, on *Acer*, J.C. Lendemer et al. 35402 (NY). COLUMBUS CO.: Lake Waccamaw State Park, Sand Ridge Nature Trail, 18.xi.2013, on *Quercus*, J.C. Lendemer et al. 39217 (NY). CURRITUCK CO.: North River Game Land, W of Maple Rd. 0.5 mi N of int w/ US158, 12.iv.2012, on *Carpinus*, J.C. Lendemer et al. 30694 (NY). DARE CO.: Alligator River National Wildlife Refuge, SE of jct of Butler Rd. and Sandy Ridge Rd., 21.iii.2014, on *Acer*, J.C. Lendemer et al. 42920 (NY). GATES CO.: Merchants Millpond State Park, oxbow of Bennett's Creek, 11.xii.2009, on *Carpinus*, J.C. Lendemer 20362 & F. Williams (NY). GRAHAM CO.: Nantahala National Forest, Joyce Kilmer-Slickrock Wilderness, vicinity of summit of Haeo Mountain, 30.ix.2014, on *Fagus*, J.C. Lendemer 43862 & J. Allen (NY). HERTFORD CO.: Chowan Swamp Game Land, E shore of Parkers Ferry Rd., 11.iv.2012, on *Quercus*, J.C. Lendemer et al. 30519 (NY). HYDE CO.: Alligator River National Wildlife Refuge, Chip Rd. 3.2 mi S of jct w/ Whipping Creek Rd., 24.iii.2014, on *Acer*, J.C. Lendemer et al. 43259 (NY). JACKSON CO.: Cedar Cliff Mountain, along NC281, 15.ix.1996, on *Liriodendron*, R.C. Harris 38639 (NY). JONES CO.: Croatan National Forest, tributary to Hunters Creek, 7.iii.2013, on *Acer*, J.C. Lendemer et al. 35678 (NY). MECKLENBURG CO.: E shore of Lake Wylie, 11.ii.1999, on bark, R.J. Hill 529 (NY). NASH CO.: along Tar River, 3 mi SW of Spring Hope, 2.viii.1966, G.T. Johnson s.n. (NY). ONSLOW CO.: White Oak River Game Land, Quantenary Tract, 28.x.20123, on *Quercus*, J.C. Lendemer et al. 39162 (NY). ORANGE CO.: Mason Farm Biological Reserve, Big Oak Woods, 30.viii.2007, on fallen branch, G.B. Perlmutter 1162 (NY). PASQUOTANK CO.: Great Dismal Swamp National Wildlife Refuge, E side of County Line Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 31016 (NY). PENDER CO.: Holly Shelter Game Land, S portion of Shaken Creek floodplain, 27.x.2013, on *Quercus*, J.C. Lendemer et al. 38879 (NY). SWAIN CO.: Great Smoky Mountains National Park, Mingus Creek Trail, W of US441 ~2 mi S of Tow String, 28.vi.2010, on *Fagus*, W.R. Buck 56290 (NY). TYRRELL CO.: Pocosin Lakes National Wildlife Refuge, Frying Pan Boating Access, 10.xii.2012, on fallen *Acer*, R.C. Harris 58377 (NY). WAKE CO.: William B. Umstead State Park, near E shore of Sycamore Lake, 26.vii.2008, on *Fagus*, G.B. Perlmutter 1614 (NY). YANCEY CO.: Pisgah National Forest, Bald Knob Ridge Trail 186, 2.x.2014, on *Fagus*, J.C. Lendemer 44173 & J. Allen (NY). **OKLAHOMA**. CHEROKEE CO.: J.T. Nickel Family Nature Wildlife Preserve (J5 Ranch), 30.x.2000, on *Acer*, R.C. Harris 44240 (NY). **PENNSYLVANIA**. CAMERON CO.: Elk State Forest, Fourmile Run Rd., 3.25 mi N of jct w/ PA155, 2.ix.2010, on *Carpinus*, J.C. Lendemer 24415 (NY). ELK CO.: Allegheny National Forest, FR131 1.25 mi SW of jct w/ FR228, 9.ix.2010, on *Fagus*, J.C. Lendemer 25142 (NY). POTTER CO.: Elk State Forest, East Cowley Run Rd. 0.25–0.5 mi E of State Park boundary, 2.ix.2010, on *Carpinus*, J.C. Lendemer 24350 (NY). WARREN CO.: Allegheny National Forest, S of S boundary of Hickory Creek Wilderness, 7.ix.2010, on *Carpinus*, J.C. Lendemer 24674 (NY). WYOMING CO.: Bardwell, 29.iii.1902, on bark, W.C. Barbour 1205 (NY).



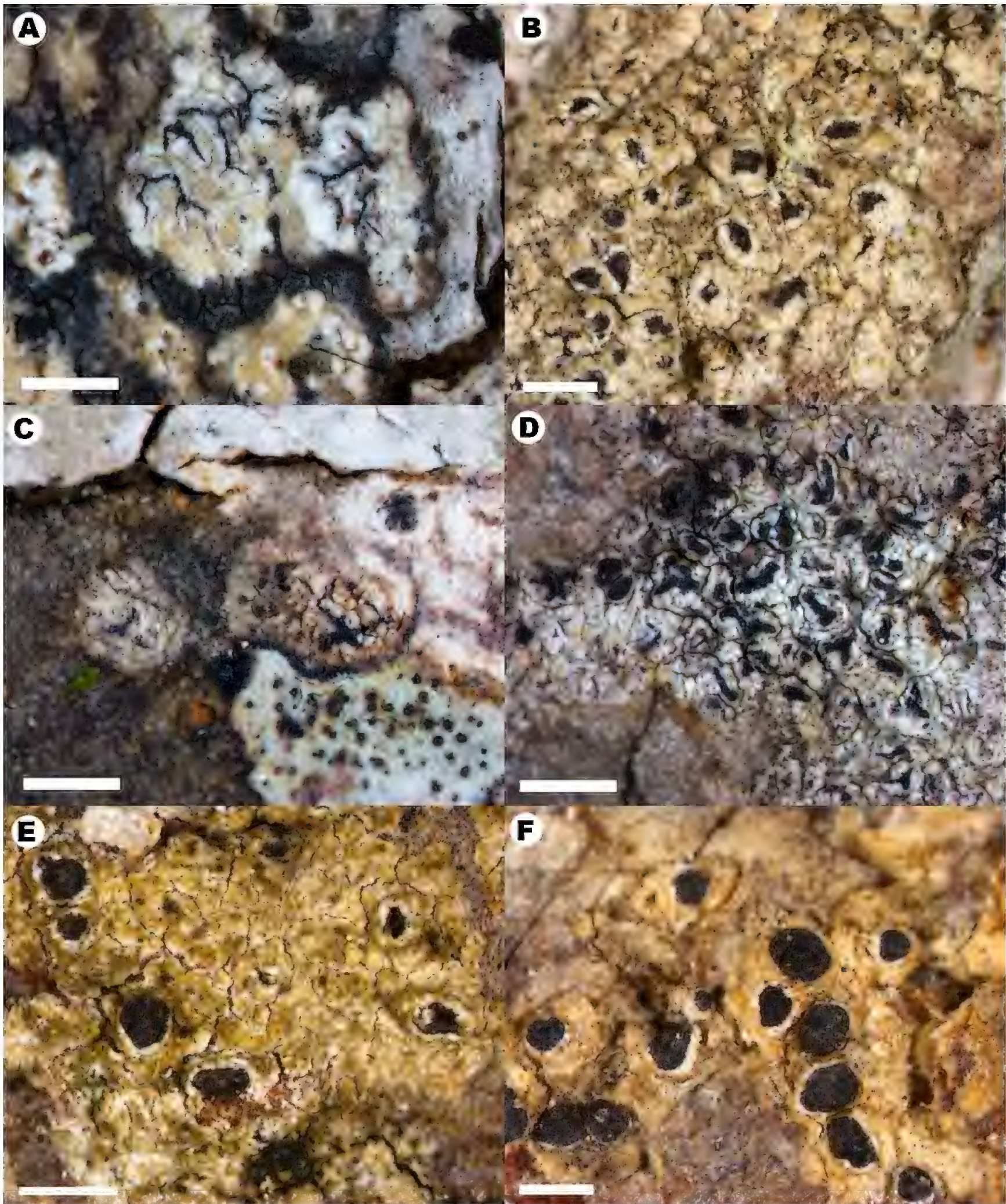
**SOUTH CAROLINA.** BEAUFORT CO.: Spring Island, NW side, 0–0.25 mi S of Shrimp Pond Rd., 21.xii.2013, on *Acer*, J.C. Lendemer et al. 42473 (NY). **BERKELEY CO.:** Francis Marion National Forest, S of Santee River, FS152/Cooper Ridge Rd. 0.4 NE of jct w/ FSR152A, 5.xii.2013, on *Quercus*, J.C. Lendemer et al. 41262 (NY). **CHARLESTON CO.:** Edisto Island, Botany Bay Plantation Wildlife Management Area, N of Jason Lake and of jct of Botany Bay Rd. and Rabbit Rd., 20.xii.2013, on *Quercus*, J.C. Lendemer et al. 42286 (NY). **CHESTER CO.:** Chester, 30.i.1886, on *Acer*, H.A. Green s.n. (NY). **COLLETON CO.:** Donnelley Wildlife Management Area, 0.1 mi NE of Pineland Rd., 18.xii.2013, on *Quercus*, J.C. Lendemer et al. 41817 (NY). **FLORENCE CO.:** 3 mi NW of Lake City, 29.i.1967, G.T. Johnson s.n. (NY). **PICKENS CO.:** along Eastatoe Creek on W side of Twisting Pine Mountain, 27.ix.1989, W.R. Buck 17696 (NY). **YORK CO.:** 5 mi SE of Blacksburg, 27.i.1967, G.T. Johnson s.n. (NY). **TENNESSEE** **ANDERSON CO.:** 5 mi NW of Oliver Springs, 4.ix.1960, on *Acer*, G.T. Johnson s.n. (NY). **BLOUNT CO.:** Great Smoky Mountains National Park, Abrams Creek, Rabbit Creek Trail, 30.vii.2010, on *Fagus*, W.R. Buck 56432 (NY). **CARTER CO.:** Doe River Gorge, ~1 mi N of US19E, 26.ix.1993, on *Acer*, R.C. Harris 30985 (NY). **COCKE CO.:** Great Smoky Mountains National Park, Gabes Mountain Trail 0–2 mi E of jct w/ Maddron Bald Trail, 5.viii.2009, on *Carpinus*, J.C. Lendemer 19029 & E. Tripp (NY). **SEVIER CO.:** Great Smoky Mountains National Park, Bullhead Trail, 0–5 mi from parking area on Cherokee Orchard Rd., 9.x.2011, on *Betula*, E. Tripp et al. 2138 (NY). **WHITE CO.:** 5 mi E of Sparta, 10.ix.1960, G.T. Johnson s.n. (NY). **WILSON CO.:** Cedars of Lebanon State Park, 6.iv.1967, on *Quercus*, R.C. Harris 1266-C (NY). **TEXAS.** **WALKER CO.:** 4 mi E of Huntsville, 10.vii.1965, G.T. Johnson s.n. (NY). **VERMONT.** **ADDISON CO.:** Green Mountain National Forest, Bristol Cliffs Wilderness Area, W-facing slopes of South Mountain, 20.x.2010, on *Quercus*, J.C. Lendemer 27342 & M. Sundue (NY). **CHITTENDEN CO.:** Underhill, 20.vi.1951, on *Fagus*, R.F. Cain 25556 (NY). **ESSEX CO.:** Victory State Forest, Umpire Mountain, 16.v.2008, on *Fagus*, R.C. Harris 54392 (NY). **RUTLAND CO.:** Brandon, 27.iv.1924, D.L. Dutton 2128 (NY). **WINDHAM CO.:** Newfane, x.1892, A.J. Grout x150 (NY). **VIRGINIA.** **ACCOMACK CO.:** Chincoteague Island, 13.iv.1963, C.F. Reed 61382 (NY). **CHESAPEAKE CITY:** Great Dismal Swamp National Wildlife Refuge, SW corner of int of Persimmon Ditch and Myrtle Ditch, 13.iv.2012, on *Acer*, J.C. Lendemer et al. 30891 (NY). **GILES CO.:** Cascades Recreation Area on Little Stoney Creek, 23.vi.1978, on *Acer*, R.C. Harris 12890 (NY). **GLOUCESTER CO.:** SW jct of Hickory Fork Rd. and Cedar Bush Rd., 4.xi.2014, on *Quercus*, J. Hollinger 6888 (NY). **GRAYSON CO.:** Grayson Highlands State Park, Wilburn Ridge, 12.ix.1991, on *Fagus*, W.R. Buck 20657 (NY). **MECKLENBURG CO.:** 5 mi S of Clarksville, xi.1954, on *Quercus*, W.L. Culberson s.n. (NY). **PATRICK CO.:** Blue Ridge Parkway, Rock Castle Gorge Loop Trail, 6.x.1995, on *Acer*, R.C. Harris 36668 (NY). **SHENANDOAH CO.:** Elizabeth Furnace Recreation Area, Green Mountain, Signal Knob Trail, 18.xi.1985, J.G. Guccion 102 (NY). **SUFFOLK CITY:** Great Dismal Swamp National Wildlife Refuge, Railroad Ditch ¾ mi E of entrance on Desert Rd., 12.xii.2009, on *Acer*, J.C. Lendemer 20392 & B.P. Hodgkinson (NY). **YORK CO.:** Waller Mill Park, 3.vii.2004, on *Fagus*, B.P. Hodgkinson 828 (NY). **WEST VIRGINIA.** **PENDLETON CO.:** Monongahela National Forest, Fanny Bennett Hemlock Grove, 20.iv.2001, on *Fagus*, M.S. Cole 8640 (NY). **POCAHONTAS CO.:** Spruce, ii.1923, on *Fagus*, F.W. Gray L137 (NY).

**NOTE × – SCHISMATOMMA GRAPHIDIODES NEW TO NORTH AMERICA**

*Schismatomma graphidioides* (Leight.) Zahlbr., Öst. Bot. Z., 68: 154. 1919. ≡ *Chiodecton graphidioides* Leight., Ann. Mag. Nat. Hist., ser. 2, 13: 395. 1854. ≡ *Enterographa graphidioides* (Leight.) Almb., Bot. Notiser, 1942: 391. 1942. **TYPE: IRELAND:** Loughlinstown, without collector or date [hb. Borrer] (BM[n.v.], holotype).

Notes. – *Schismatomma pericleum* (Ach.) Branth & Rostr. is a crustose lichen that is widespread in Europe (Bielczyk et al. 2004, Czarnota & Krzewicka 2004, Malíček & Palice 2015, Tehler 1993), southwest Asia (Navrotskaya et al. 1996, Yildiz & John 2002), and North America (Tehler 1993). It is a rare species in eastern North America that has been reported from scattered locations in northeastern temperate regions and from the southern Appalachian Mountains (Tehler 1993). In 2015 Kevin England, a colleague from Alabama, donated a suite of specimens from near his home in Bankhead National Forest near the southern terminus of the Appalachian Mountains. While examining a specimen of *Arthonia rubella* (Fée) Nyl., one of us (JCL) noticed several admixed thalli of *Schismatomma*. Although the thalli were well developed and the apothecia elongate and weakly branching, he assumed it represented an extreme morph-





**Figure 13.** Comparison between *Schismatomma graphidioides* (A-D) and *S. pericleum* (E and F). A, morphology of *S. graphidioides* as exemplified by an isotype (C. Sbarbaro s.n.) of its synonym *Enterographa italica*. B, morphology of *S. graphidioides* from New Jersey, U.S.A. (Lendemer 3372, NY). C and D, morphology of *S. graphidioides* from Alabama, U.S.A. (England 5272, NY). E, morphology of *S. pericleum* from Tennessee, U.S.A. (Tripp et al. 2684, NY). F, morphology of *S. pericleum* from Switzerland (E. Frey 27538, NY). Scales all = 1.0 mm.



-otype of the variable species *S. pericleum* (Tehler 1993). Upon examining the specimen later, RCH questioned the identification, which led us to the name *S. graphidioides*.

*Schismatomma graphidioides* has long been treated as a rare European endemic that differs from *S. pericleum* in having a thicker, more well developed thallus that is smooth and lighter in color, as well as ascomata that are distinctly elongate and branched (vs. short and relatively unbranched). Comparison of the specimens from Alabama (Figures 13C and D) and New Jersey (Figure 13B) with an isotype of *Enterographa italica* B. de Lesd. (Figure 13A), which was treated as a synonym of *S. graphidioides* by Tehler (1993) confirmed that it represents the first report of the species from North America. We reexamined all of the North American vouchers of *S. pericleum* at NY (cited below) and confirmed that all but one, from the Coastal Plain of southern New Jersey, represent that taxon rather than *S. graphidioides*.

Specimens of *Schismatomma graphidioides* examined. – **ITALY:** Liguria orient. prope Genuam, iii.1931, on *Castanea*, *C. Sbarbaro s.n.* = *Lichenotheca Exsiccati* No. 2 (NY!, isotype of *Enterographa italica*). **U.S.A. ALABAMA.** LAWRENCE CO.: 0.48 air mi SW of Moulton, H.A. Alexander Park, 22.ii.2015, on *Carya*, *K. England 5272 & J. England* (NY). **NEW JERSEY.** ATLANTIC CO.: Wharton State Forest, N of Pleasant Mills Cemetery, 24.x.2004, on *Quercus*, *J.C. Lendemer 3372* (NY).

*Selected specimens of Schismatomma pericleum* examined. – **ITALY.** UMBRIA: Valle San Martino, Perugia, 19.vi.1998, on *Castanea*, *S. Ravera s.n.* (NY). **SWITZERLAND.** BERNE: Berner Oberland, Amt Saanen, Lauenen, 19.viii.1961, on *Abies/Picea*, *E. Frey 27538* (NY). **U.S.A. MICHIGAN.** GOGEBIC CO.: Ottawa National Forest, NE of Bobcat Lake, 19.vii.1975, on *Thuja*, *W.R. Buck B261-b* (NY [!A. Tehler 1995]). **TENNESSEE.** BLOUNT CO.: Great Smoky Mountains National Park, Rabbit Creek Trail 0–2.7 mi E of Abrams Creek, 24.vi.2011, on *Pinus*, *E. Tripp et al. 2684* (NY). **HAMILTON CO.:** Chickamauga Gorge, 12 mi from Chattanooga, on *Tsuga*, *W.W. Calkins 141* (NY).

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## *Physconia subpallida* new to Québec, from Gatineau Park

RICHARD TROY McMULLIN<sup>1</sup>, JESSICA L. ALLEN<sup>2</sup> AND JAMES P. PAGÉ<sup>3</sup>

**ABSTRACT.** – *Physconia subpallida* is endemic to eastern North America and was once widespread. Over the past century it has declined considerably throughout its range. Currently, it is only known from a small number of extant populations, the largest of which is in southeastern Ontario. In Canada, it is listed as endangered both federally and provincially. Here, we report the first records of *P. subpallida* in Québec from Gatineau Park.

**KEYWORDS.** – Appalachians, biogeography, COSEWIC, COSSARO, Great Lakes, rare species.

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### INTRODUCTION

*Physconia subpallida* Essl. is a medium-sized lichen (thalli <8 cm in diameter) that is characterized by a pale lower surface, dark squarrose rhizines, the absence of isidia or soredia, and a densely pruinose upper surface (Esslinger 1994). Images and detailed descriptions of this species have been provided by Esslinger (1994) and McMullin (2015). It is endemic to eastern North America, where it was once widespread, but it has declined considerably over the past century (COSEWIC 2009, McMullin 2015). The largest extant population is in southeastern Ontario (COSEWIC 2009, McMullin 2015). In Canada, *P. subpallida* is the only inland (i.e., non-coastal) lichen federally listed as endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2009). It was previously only known to occur in Ontario (McMullin 2015), where it is provincially listed as endangered by the Committee on the Status of Species at Risk in Ontario (Government of Ontario 2015). Here, we report the first occurrence in Québec from Gatineau Park (Fig. 1).

### MATERIALS AND METHODS

**Study Site.** – Gatineau Park is managed by the National Capital Commission and includes federal, provincial, and private lands. It is in the Outaouais region of Québec and covers 363 km<sup>2</sup> northwest of Gatineau and Ottawa (Fig. 1). The park contains a wide variety of habitats (Freebury 2011), but our survey was restricted to a mixed-wood deciduous forest with tree cover dominated by *Acer saccharum* (sugar maple), *Fagus grandifolia* (American beech), *Ostrya virginiana* (ironwood), *Quercus alba* (white oak), and *Q. rubra* (red oak) (Fig. 2A).

**Surveying.** – We conducted visual surveys at selected sites in the King Mountain area of Gatineau Park that appeared to have similar habitats to those colonized by *Physconia subpallida* in Ontario – following the habitat descriptions of McMullin (2015). At each site, we followed the floristic habitat sampling methods described by Newmaster et al. (2005). Images were captured with a Nikon D3100 digital camera. Maps were produced in QGIS 2.8 and modified in Adobe Photoshop CS6.

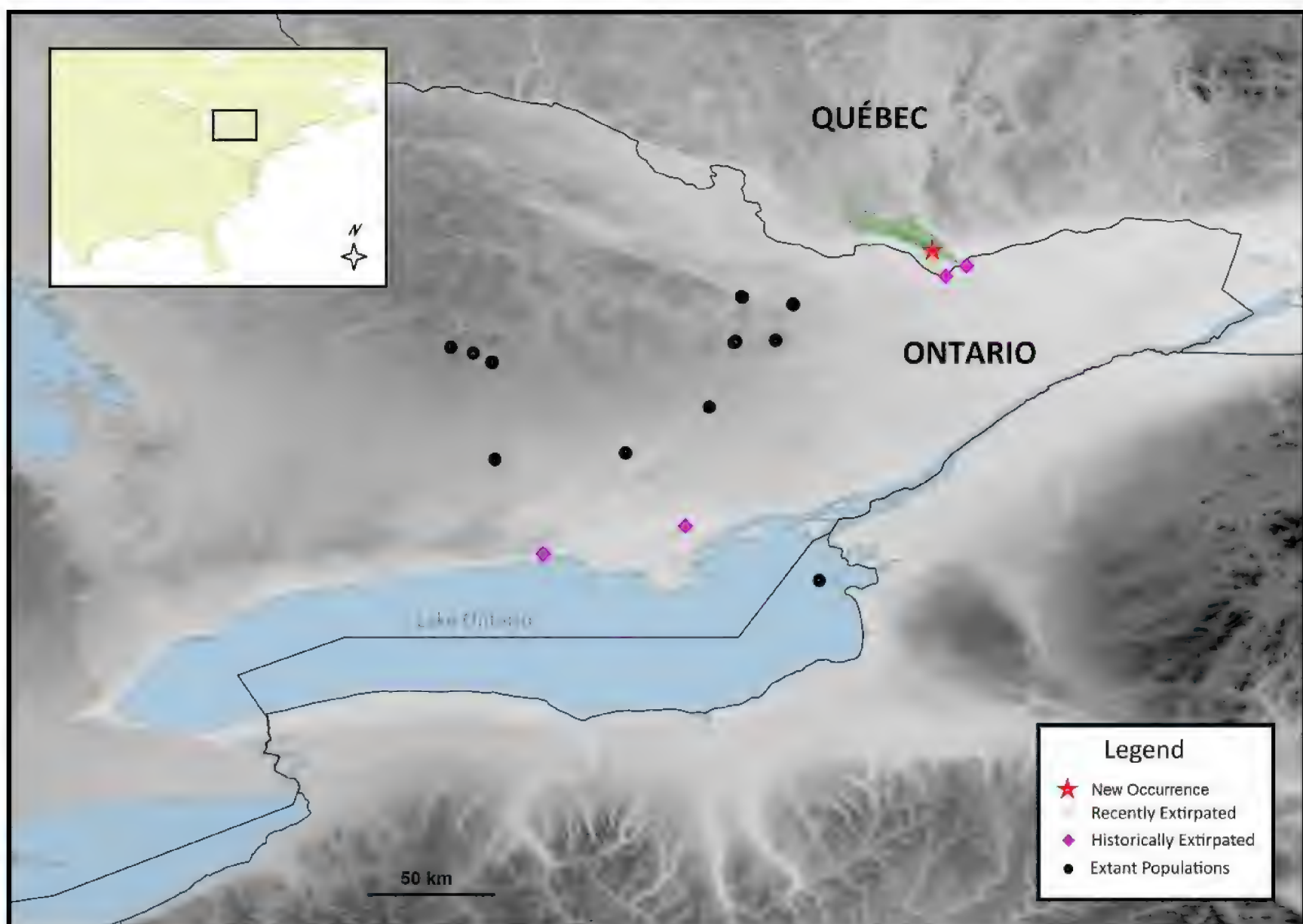
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**Figure 1.** Location of all reported *Physconia subpallida* records in Canada. The first Québec record, indicated by a star, was from Gatineau Park, in green.

## RESULTS

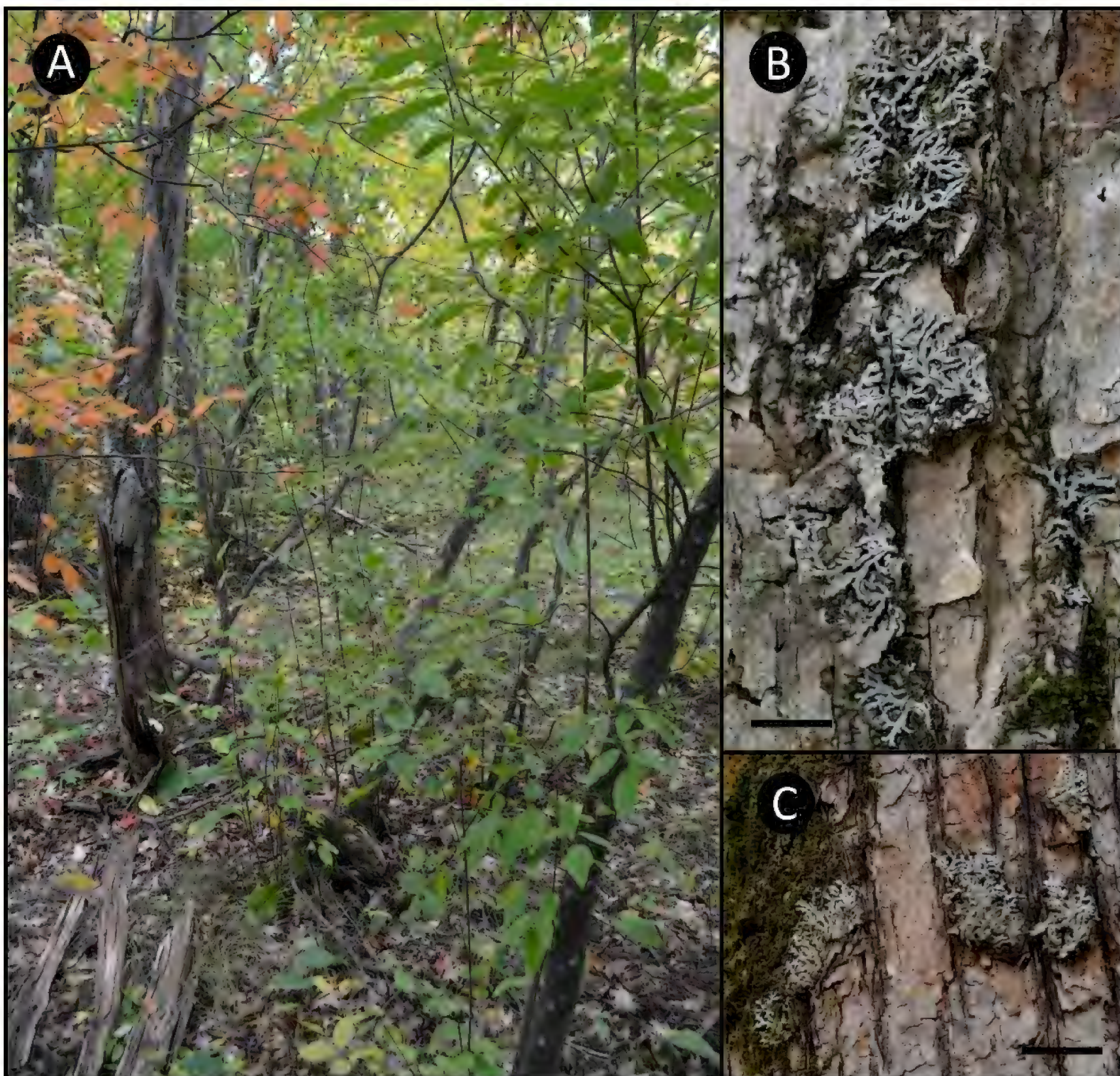
Five thalli of *Physconia subpallida* were observed and photographed on the trunks of two trees. Three thalli were found on *Quercus alba* (Fig. 2B) and two thalli were found on *Ostrya virginiana* (Fig. 2C). All five thalli were sterile (i.e., apothecia were absent).

## DISCUSSION

The five thalli of *Physconia subpallida* we discovered are the first records in the province of Québec. They also represent the only lichen in Québec that is federally listed as endangered. Its occurrence on *Quercus alba* is unusual, but not surprising. Recent collections and observations have been made primarily from *Ostrya virginiana* and *Fraxinus* species, but historical collections are known from a wider variety of tree species and even rock (Esslinger 1994, COSEWIC 2009, McMullin 2015).

Search effort for *Physconia subpallida* in Canada has increased since it was listed by COSEWIC (2009) and the number of extant localities reported in the country has increased from two to twelve, which includes our new Québec locality (McMullin 2015). Historically, it was widespread in eastern North America (Esslinger 1994, COSEWIC 2009, McMullin 2015). Most populations, however, have been extirpated. In the United States, all populations (~30) are historical except three, one each in Oklahoma, Tennessee, and Virginia (Esslinger 1994, COSEWIC 2009, J.C. Lendemer pers. comm., R.C. Harris pers. comm.). It has not been recollected at the majority of the historical localities despite, in many cases, extensive fieldwork that would presumably have uncovered it. The largest extant population is in southeastern Ontario and along its border in southwestern Québec. Our discovery suggests that continued survey efforts in unexplored areas with potential habitat in southern Ontario, southern Québec, and the Appalachians could reveal additional localities of this rare and declining species.





**Figure 2.** *Physconia subpallida* in Gatineau Park, Québec. A, habitat. B, one of the three thalli discovered on *Quercus alba*, scale = 1.5 cm. C, two thalli on *Ostrya virginiana*, scale = 1 cm.

#### ACKNOWLEDGEMENTS

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# A Cumulative Checklist for the Lichen-Forming, Lichenicolous and Allied Fungi of the Continental United States and Canada, Version 21

THEODORE L. ESSLINGER<sup>1</sup>

**ABSTRACT.** – Version 21 of the checklist of lichen-forming, lichenicolous and allied fungi occurring in North America north of Mexico is presented. It includes a total of 5,421 species in 733 genera, with an additional 41 subspecies, 45 varieties, and 3 forms. The total species number includes 588 lichenicolous fungi, 96 saprophytic fungi related to lichens or to lichenicolous fungi, and another 53 species of varying and/or uncertain biological status.

**KEYWORDS.** – Canada, floristics, lichens, nomenclature, United States.

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## INTRODUCTION

This checklist consists of cumulative updates to the most recently published North American checklist by Esslinger and Egan (1995). The style and conventions for listings used there are also generally followed here. Within each genus the accepted names are given first and are in boldface. Names considered to be synonyms are given in normal font only. Significant changes made since the previous online version are given in blue font. As before, the following symbols are used to indicate the lichenicolous fungi and other allied fungi: \* = lichenicolous fungi (parasites on living lichens), + = saprophytic fungi related to either lichens or lichenicolous fungi, on various substrates, # = various fungi of uncertain status: e.g., those which are questionably or weakly lichen-forming; or algicolous/saprophytic; or parasitic when young but saprophytic or lichen-forming when mature; or lichenicolous lichens.

The first North American (north of Mexico) lichen checklist produced by Mason Hale and Bill Culberson in 1956 (*Castanea* 21: 73-105) listed 2,280 species in 193 genera (their count), and included few or no lichenicolous or allied fungi. Almost forty years later, the first checklist version with which I was involved (Esslinger & Egan 1995) reported 3,580 lichen species and another 219 species of lichenicolous and allied fungi, all in 477 genera. The count for this current version (#21) is 5,421 total species in 733 genera, with an additional 41 subspecies, 45 varieties, and 3 forms. The total species number includes 588 lichenicolous fungi (\*), 96 saprophytic fungi related to lichens or to lichenicolous fungi (+), and another 53 species of varying and/or uncertain biological status (#).

This list is updated at semi-regular intervals, usually about once each year, as changes accumulate in the literature. I would appreciate being informed of any oversights or omissions, and although not all taxonomic or nomenclatural differences of opinion will be easily or immediately settled, any polite opinions that users would like to share will be welcomed and taken under consideration. Additions or changes appearing in this version of the checklist represent reports in the literature, and their presence here does not necessarily imply endorsement by the author. In addition to inviting comments or corrections, it would be very helpful if authors of publications containing additions to the North American lichen biota, or other taxonomic and nomenclatural changes that impact it, would provide me with copies.

Previous versions of the checklist have been published online (Version #1 dated 1 December 1997 through Version #20 dated 19 April 2015). Beginning with this version (Version #21) the checklist is being simultaneously published in *Opuscula Philolichenum* and online at the usual site hosted at North Dakota

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State University: <http://www.ndsu.edu/pubweb/~esslinge/chcklst/chcklst7.htm>. The purpose of dual publication is to provide a standard formatted journal article that can be cited, to assure permanent archiving of each version, and to facilitate dissemination of the checklist to those outside of the lichenological community via indexing services such as Scopus. Although there are minor organizational differences in the introductory sections of this and the online edition, the bodies of the two editions are identical except for indenting.

## CHECKLIST

### ABROTHALLUS De Not.

- \***acetabuli** Diederich (Kocourkova et al. 2012)
- \***bertianus** De Not.
- \***bryoriarum** Hafellner
- \***caerulescens** Kotte (Diederich 2003)
- \***cetrariae** Kotte (Goward et al. 1996)
- \***cladoniae** R. Sant. & D. Hawksw.
- \***eriodermæ** Suija, Etayo & Pérez-Ortega (Suija et al. 2015)
- \***ertzii** Suija, & Pérez-Ortega (Suija et al. 2015)
- \***halei** Pérez-Ortega, Suija, D. Hawksw. & R. Sant. (Suija et al. 2011)
- \***hypotrachynæ** Etayo & Diederich (Lendemer & Knudsen 2008b)
- \***microspermus** Tul. (Cole & Hawksworth 2001)
- \***nephromatis** Suija, & Pérez-Ortega (Suija et al. 2015)
- \***parmeliarum** (Sommerf.) Arnold
- \***peyritschii** (Stein) Kotte
- \***pezizicola** Diederich & R. C. Harris (Diederich 2003)
- \***prodiens** (Harm.) Diederich & Hafellner
- \***secedens** Wedin & R. Sant. (Spribille et al. 2010)
- \***suecicus** (Kirschst.) Nordin (Diederich 2003)
- \***tulasnei** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- \***usneae** Rabenh. (Cole & Hawksworth 2001)
- \***welwitschii** Mont. ex Tul.
- \***oxysporus** Tul. = *Phacopsis oxyspora*
- \***usneae** auct. non Rabenh. = *Lichenostigma maureri*

### ABSCONDITELLA Vězda

- amabilis** T. Sprib. (Spribille et al. 2009)
- celata** Döbbeler & Poelt (Spribille et al. 2009)
- lignicola** Vězda & Pišút (Nash et al. 1998)
- sphagnorum** Vězda & Poelt
- trivialis** (Willey ex Tuck.) Vězda

### ACANTHOTHECIS Clem.

- aurantiaca** (Müll. Arg.) Staiger & Kalb Syns.: *Graphina intertexta*, *Graphis intertexta* (Staiger 2002)
- floridana** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- gracilis** Staiger & Kalb (Staiger & Kalb 1999)
- leucopepla** (Tuck.) E. Tripp & Lendemer Syns.: *Graphis leucopepla*, *Graphina abaphoides* (Tripp et al. 2010)
- leucoxanthoides** Lendemer (Lendemer & Harris 2014a)
- mosquitensis** (Tuck.) E. Tripp & Lendemer Syns.: *Graphis mosquitensis*, *Graphina subvirginalis* (Tripp et al. 2010)
- paucispora** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- peplophora** (M. Wirth & Hale) E. Tripp & Lendemer Syn.: *Graphina peplophora* (Tripp et al. 2010)
- poitaeoides** (M. Wirth & Hale) E. Tripp & Lendemer Syn.: *Graphis poitaeoides* (Tripp et al. 2010)
- abaphoides* (Nyl.) Staiger & Kalb (Staiger & Kalb 1999) = *A. leucopepla*
- intertexta* (Müll. Arg.) Staiger & Kalb = *A. aurantiaca*

**ACAROCONIUM** Kocourk. & D. Hawksw. (Kocourková & Hawksworth 2008)  
\***punctiforme** Kocourk. & D. Hawksw. (Kocourková & Hawksworth 2008)

**ACAROSPORA** A. Massal.

**affinis** K. Knudsen (Knudsen 2007a)  
**brodoana** K. Knudsen, Kocourk. & M. Westb. (Knudsen et al. 2016)  
**americana** H. Magn. (Knudsen et al. 2011b)  
**asahinae** H. Magn.  
**badiofusca** (Nyl.) Th. Fr. Syn.: *Sarcogyne athroocarpa* (Knudsen & Kocourková 2013)  
**boulderensis** H. Magn. (Knudsen et al. 2014b; McCune et al. 2014b)  
**brattiae** K. Knudsen (Knudsen 2007a)  
**brouardii** B. de Lesd. (Knudsen 2007a, Knudsen et al. 2008a)  
**calcareo** K. Knudsen (Knudsen 2007a)  
**canadensis** H. Magn.  
**cervina** A. Massal.  
**chrysops** (Tuck.) H. Magn. (Knudsen et al. 2008a)  
**clauzadeana** (Llimona) Casares & Hafellner Syn.: *Biatorella clauzadeana*  
**coloradiana** H. Magn.  
**complanata** H. Magn.  
**contigua** H. Magn. (Brodo et al. 2001, Knudsen 2007a)  
**elevata** H. Magn.  
**epilutescens** Zahlbr. (Knudsen 2005a)  
**erythrophora** H. Magn. (Knudsen 2007a)  
**fuscata** (Schrader) Arnold  
**fuscescens** H. Magn.  
**glaucocarpa** (Ach.) Körber  
**heufleriana** Körber  
**hilaris** (Dufour) Hue  
**impressula** Th. Fr.  
#**interjecta** H. Magn.  
**janae** K. Knudsen (Lumbsch et al. 2011)  
**maccarthyi** K. Knudsen & Kocourk. (Knudsen & Kocourková 2015)  
**macrospora** (Hepp) A. Massal. ex Bagl.  
**moenium** (Vainio) Räsänen (Nordin et al. 2009)  
**molybdina** (Wahlenb.) Trevisan  
#**nashii** K. Knudsen (Knudsen 2011a)  
**nevadensis** H. Magn.  
**nicolai** B. de Lesd. (Knudsen & Morse 2009)  
**nodulosa** (Dufour) Hue var. **nodulosa**  
**novomexicana** H. Magn. (Knudsen 2007a)  
**obnubila** H. Magn.  
**obpallens** (Nyl. ex Hasse) Zahlbr. Syn.: *Lecanora obpallens*  
**oligospora** (Nyl.) Arnold  
**orcuttii** K. Knudsen (Knudsen 2010 [2011])  
**oreophila** K. Knudsen (Knudsen 2007a)  
**peliscypha** Th. Fr.  
**piedmontensis** K. Knudsen (Knudsen et al. 2011b)  
**robiniae** K. Knudsen (Knudsen 2007a)  
**rosulata** (Th. Fr.) H. Magn. (Knudsen et al. 2010)  
**rouxii** K. Knudsen, Elix & Reeb (Knudsen 2007a, Knudsen et al. 2008a)  
**rugulosa** Körber  
**saepincola** H. Magn.  
**schleicheri** (Ach.) A. Massal.  
**scotica** Hue  
**sinopica** (Wahlenb.) Körber  
**socialis** H. Magn.



**sparsa** H. Magn.  
**sphaerosperma** R. C. Harris & K. Knudsen (Knudsen et al. 2011b)  
**#stapfiana** (Müll. Arg.) Hue  
**strigata** (Nyl.) Jatta  
**succedens** H. Magn.  
**thamnina** (Tuck.) Herre  
**thelococcoides** (Nyl.) Zahlbr. Syns.: *Lecanora thelococcoides*, *L. pleiospora*, *L. pleistospora*  
**tongletii** Hue  
**tuckerae** K. Knudsen (Knudsen 2007a)  
**veronensis** A. Massal.  
*aeruginosa* Hasse = *Caeruleum heppii*  
*albida* H. Magn. = *A. epilutescens*  
*albomarginata* (Herre) G. Salisb. = *A. elevata* (Knudsen 2007a)  
*amabilis* H. Magn. = *A. socialis* (Knudsen 2007a)  
*amphibola* Wedd. = *Myriospora smaragdula*  
*amphibola* sensu auct. = *Myriospora rhagadiza*  
*applanata* H. Magn. = *A. veronensis* (Knudsen 2007a)  
*\*arenacea* H. Magn. = *Polysporina arenacea* (Knudsen & Kocourková 2008a)  
*arenosa* Herre = *Sarcogyne arenosa*  
*asperata* H. Magn. = *A. boulderensis* (Kocourková et al. 2014b)  
*bella* (Nyl.) Jatta = *A. rhabarbarina* (Knudsen et al. 2008a), but a misidentification for North America (Knudsen & Kocourková 2012a)  
*bullata* Anzi = misidentification for North America (Knudsen et al. 2010)  
*caesiofusca* (Müll. Arg.) H. Magn. = *A. nicolai*  
*californica* Zahlbr. = *A. badiofusca* (Knudsen 2007a)  
*carnegiei* Zahlbr. = *A. obpallens* (Knudsen 2005b)  
*cartilaginea* H. Magn. = *A. fuscata*  
*chlorophana* (Wahlenb.) A. Massal. = *Pleopsidium chlorophanum*  
*cineracea* (Nyl.) Wedd. = misidentification for North America  
*cinereoalba* (Fink) H. Magn. = *A. americana* (Knudsen et al. 2011b)  
*citrina* (Taylor) Zahlbr. = misidentification for North America (Knudsen & Flakus 2016)  
*desolata* H. Magn. = *Sarcogyne desolata*  
*dispersa* H. Magn. = *Trimmatothelopsis dispersa*  
*dissipata* H. Magn. = *A. schleicheri*  
*evoluta* H. Magn. = *A. socialis* (Knudsen 2007a)  
*flava* (Bellardi) Ach. = *Pleopsidium flavum*  
*gallica* H. Magn. = *A. janae* for North American reports (Knudsen et al. 2011b)  
*geogena* H. Magn. = *A. nodulosa* (Knudsen 2007a)  
*geophila* H. Magn. = *A. nodulosa*  
*glebosa* (Flotow) Körber = *A. oligospora*  
*hassei* Herre (Knudsen 2007a) = *Myriospora hassei* (Arcadia & Knudsen 2012)  
*heppii* (Nägeli ex Hepp) Nägeli ex Körber = *Caeruleum heppii*  
*immersa* Fink = *Caeruleum immersum*  
*incertula* H. Magn. = *A. novomexicana* (Knudsen 2007a)  
*instrata* H. Magn. = *A. obpallens* (Lendemer et al. 2008c)  
*intercedens* H. Magn. = *A. socialis* (Knudsen & Lendemer 2005b)  
*interposita* H. Magn. = *A. thamnina* (Knudsen 2007a)  
*interspersa* H. Magn. = *A. succedens* (Knudsen 2011a)  
*lapponica* (Ach. ex Schaerer) Th. Fr. = *Sarcogyne lapponica* (see note there)  
*\*lapponica* auct. N.A. = *Polysporina subfuscescens*  
*montana* H. Magn. = *A. rugulosa*  
*nigromarginata* B. de Lesd. = *A. strigata* (Knudsen 2007a)  
*nitida* H. Magn. (Weber & Wittman 2000) = *A. elevata* for North American records (Knudsen 2007a)  
*nodulosa* (Dufour) Hue var. *reagens* Zahlbr. = *A. nodulosa*  
*obscura* H. Magn. = *A. veronensis* (Knudsen 2007a)  
*ocellata* H. Magn. = *A. schleicheri*

oxytona (Ach.) A. Massal. = *Pleopsidium flavum*  
 particularis H. Magn. = *Myriospora hassei* (Knudsen 2007a, Arcadia & Knudsen 2012)  
 peltastica Zahlbr. = *A. strigata* (Knudsen & Lendemer 2005b)  
 peltata Hasse = *A. strigata* (Knudsen 2007a)  
 pleiospora (Nyl.) Hasse. = *A. thelococcoides* (Lendemer 2004a)  
 pleistospora (Nyl.) Hasse = *A. thelococcoides* (Lendemer 2004a)  
 pyrenopsoides H. Magn. = misidentification for North America (Knudsen & Kocourková 2010a)  
 radicata H. Magn. = *A. socialis* (Knudsen & Lendemer 2005b)  
 reagens Zahlbr. = *A. nodulosa* (Knudsen 2007a)  
 rhabbarina Hue (Knudsen et al. 2008a) = misidentification for North America (Knudsen & Kocourková 2012a)  
 rhagadiosa (Ach.) Th. Fr. = *Glypholecia scabra*  
 rimulosa H. Magn. = *A. socialis* (Knudsen 2007a)  
 rubicunda H. Magn. = *A. heufleriana* (Knudsen 2007a)  
 rufescens (Ach.) Bausch = *Myriospora smaragdula*  
 saxicola Fink = *Glypholecia scabra*  
 scabra (Pers.) Th. Fr. = *Glypholecia scabra*  
 scabrida Hedl. ex H. Magn. = *Myriospora scabrida*  
 smaragdula (Wahlenb.) A. Massal. = *Myriospora smaragdula*  
 smaragdula var. lesdainii (Harm. ex A.L. Smith) H. Magn. (Knudsen 2004a) = *Myriospora smaragdula*  
 squamulosa (Schrader) Trevisan = *A. macrospora* (Knudsen 2007a)  
 squamulosa sensu Th. Fr. = *A. macrospora*  
 stenospora (Stizenb.) Hue = *Pleopsidium flavum*  
 subalbida H. Magn. = *A. socialis* (Knudsen & Lendemer 2005b)  
 subcontigua H. Magn. = *A. schleicheri*  
 \*subfuscescens (Nyl.) H. Magn. = *Polysporina subfuscescens*  
 subrufula (Nyl.) H. Olivier (McCune et al. 1997) Report based on a specimen of *Myriospora smaragdula* (Knudsen 2007b)  
 superfusa H. Magn. = *A. americana* (Lendemer & Knudsen 2011, Knudsen et al. 2011b)  
 tenebrica H. Magn. = *A. veronensis* (Knudsen 2007a)  
 terricola H. Magn. = *Trimmatothelopsis terricola* (Knudsen & Lendemer 2016)  
 texana H. Magn. = *Pleopsidium chlorophanum*  
 thermophila Herre = *A. thamnina* (Knudsen 2007a)  
 tucsonensis H. Magn. = *A. obpallens* (Knudsen 2007a)  
 umbilicata Bagl. (Harris & Ladd 2005) North American records are *Acarospora nicolai* (Knudsen et al. 2011b)  
 utahensis H. Magn. = *A. strigata* (Knudsen & Lendemer 2005b)  
 variegata H. Magn. = *A. tongleti*  
 washingtonensis H. Magn. = *A. elevata* (Knudsen 2007a)  
 weldensis H. Magn. = *Pleopsidium chlorophanum*  
 xanthophana (Nyl.) Jatta = misidentification for North America (Knudsen 2008a)

#### ACOLIUM (Ach.) Gray

carolinianum Tuck. = *Bathelium carolinianum*  
 tympanellum (Ach.) Gray = *Cyphelium inquinans*

#### ACREMONIUM Link

\***strictum** W. Gams (Spribille et al. 2010)

#### ACROCORDIA A. Massal.

**cavata** (Ach.) R. C. Harris Syn.: *Arthopyrenia cavata*  
**conoidea** (Fr.) Körber Syn.: *Arthopyrenia conoidea*  
**gemmata** (Ach.) A. Massal. Syns.: *Arthopyrenia gemmata*, *A. alba*, *A. sphaeroides* (Lendemer & Harris 2014b)  
**megalospora** (Fink) R. C. Harris Syns.: *Arthopyrenia macrospora*, *A. finkii*, *Pyrenula megalospora*



**ACROSCYPHUS** Lév.  
**sphaerophoroides** Lév.

**ACTINOGYRA** Schol. = **UMBILICARIA**  
muhlenbergii (Ach.) Schol. = *Umbilicaria muhlenbergii*  
muhlenbergii var. alpina (Tuck.) Llano = *Umbilicaria muhlenbergii*  
polyrrhiza (L.) Schol. = *Umbilicaria polyrrhiza*

**ADELOCOCCUS** Theissen & Sydow  
**\*alpestris** (Zopf) Theissen & Sydow

**ADELOLECIA** Hertel & Hafellner  
**kolaensis** (Nyl.) Hertel & Rambold Syn.: *Lecidea conferenda*  
**pilati** (Hepp) Hertel & Hafellner Syn.: *Lecidea pilati*, *L. lyngeana*, *L. subauriculata* Lynge non B. de Lesd.  
**sonorae** Hertel (Hertel 2004)

**AGONIMIA** Zahlbr.  
**allobata** (Stizenb.) P. James (Fryday 2001)  
**gelatinosa** (Ach.) M. Brand & Diederich Syn.: *Polyblastia gelatinosa* (Sérusiaux et al. 1999)  
**opuntiella** (Buschardt & Poelt) Vězda (Lendemer 2004c)  
**tristicula** (Nyl.) Zahlbr. Syn.: *Polyblastia tristicula*  
**vouauxii** (B. de Lesd.) M. Brand & Diederich (Freebury 2014)

**AGRESTIA** J. W. Thomson = **CIRCINARIA**  
cyphellata J. W. Thomson = *Circinaria hispida*  
hispida (Mereschk.) Hale & W. L. Culb. = *Circinaria hispida*

**AGYRIUM** Fr.  
**+rufum** (Pers.) Fr.

**AGYROPHORA** (Nyl.) Nyl. = **UMBILICARIA**  
leiocarpa (DC.) Gyelnik = *Umbilicaria leiocarpa*  
lyngei (Schol.) Llano = *Umbilicaria lyngei*  
rigida (Du Rietz) Llano = *Umbilicaria rigida*  
scholanderi Llano = *Umbilicaria scholanderi*

**AHLESIA** Fuckel = **THELOCARPON**  
sphaerospora (H. Magn.) G. Salisb. = *Thelocarpon sphaerosporum*

**AHTIANA** Goward  
**aurescens** (Tuck.) A. Thell & Randle Syn.: *Cetraria aurescens*, *Tuckermannopsis aurescens* (Thell et al. 1995)  
**pallidula** (Tuck. ex Riddle) Goward & A. Thell Syn.: *Cetraria pallidula*, *Tuckermannopsis pallidula* (Thell et al. 1995)  
**sphaerosporella** (Müll. Arg.) Goward Syn.: *Parmelia sphaerosporella*

**AINOA** Lumbsch & I. Schmitt (Lumbsch et al. 2001)  
**bella** Brodo & Lendemer (Brodo & Lendemer 2015)  
**mooreana** (Carroll) Lumbsch & I. Schmitt Misidentification for North America (Brodo & Lendemer 2015)

**ALECTORIA** Ach.  
**fallacina** Motyka  
**imshaugii** Brodo & D. Hawksw.  
**lata** (Taylor) Lindsay

**ochroleuca** (Hoffm.) A. Massal.  
**sarmentosa** (Ach.) Ach.  
**sorediosa** (Lång ex Räsänen) McMullin & Lendemer (McMullin et al. 2016)  
**vancouverensis** (Gyelnik) Gyelnik ex Brodo & D. Hawksw.  
**vexillifera** (Nyl.) Stizenb. (McMullin et al. 2016)  
abbreviata (Müll. Arg.) R. Howe = Nodobryoria abbreviata  
achariana Gyelnik = Bryoria pseudofuscescens  
altaica (Gyelnik) Räsänen = Bryoria nadvornikiana  
ambigua Motyka = Bryoria ambigua  
americana Motyka = **Bryoria americana**  
bicolor (Ehrh.) Nyl. = Bryoria bicolor  
boryana Delise = Gowardia nigricans  
californica (Tuck.) G. Merr. = Kaernefeltia californica  
cana (Ach.) Leighton = Bryoria pikei  
canadensis Motyka = Bryoria trichodes subsp. trichodes  
capillaris (Ach.) Crombie = Bryoria capillaris, but N.A. records are B. pikei (Velmala et al. 2014)  
cervinula Motyka = Bryoria cervinula  
cetrariza Nyl. = Kaernefeltia californica  
chalybeiformis (L.) Gray = Bryoria fuscescens  
corneliae Gyelnik = Bryoria fremontii  
delicata Motyka = a nomen nudum = Bryoria trichodes subsp. trichodes  
divergens (Ach.) Nyl. = Bryocaulon divergens  
fremontii Tuck. = Bryoria fremontii  
fuscescens Gyelnik = Bryoria fuscescens  
gowardii Lumbsch (Lumbsch & Huhndorf 2010) = Gowardia arctica  
glabra Motyka = Bryoria glabra  
haynaldii Gyelnik = misidentification for North America  
implexa (Hoffm.) Nyl. = Bryoria implexa, a European species; N. A. records are B.kockiana  
irvingii Llano = Bryoria nitidula  
jubata (L.) Ach. Commonly confused and misused name applied to various pendent species of Bryoria (Brodo & Hawksworth 1977)  
lanea auct. non (Hoffm.) Vainio = Bryoria nitidula  
lanestris (Ach.) Gyelnik = Bryoria fuscescens (Velmala et al. 2014)  
luteola Mont. = A. sarmentosa  
minuscule (Nyl. ex Arnold) Degel. = Pseudephebe minuscule  
nadvornikiana Gyelnik = Bryoria nadvornikiana  
nana Motyka = a nomen nudum = Bryoria simplicior  
nidulifera Norrlin = Bryoria furcellata  
nigricans (Ach.) Nyl. = Gowardia nigricans  
nitidula (Th. Fr.) Vainio = Bryoria nitidula  
norstictica Motyka = a nomen nudum = Bryoria pseudofuscescens  
oregana Tuck. = Nodobryoria oregana  
positiva (Gyelnik) Motyka = Bryoria fuscescens  
pseudofuscescens Gyelnik = Bryoria pseudofuscescens  
pubescens (L.) R. Howe = Pseudephebe pubescens  
**sarmentosa subsp. vexillifera** (Nyl.) D. Hawksw. = **A. vexillifera** (McMullin et al. 2016)  
setacea (Ach.) Motyka = Bryoria pikei for North American records  
simplicior (Vainio) Lynge = Bryoria simplicior  
stigmata Bystrek = A. sarmentosa  
subcana (Nyl. ex Stizenb.) Gyelnik = Bryoria fuscescens (Velmala et al. 2014)  
subdivergens E. Dahl = Nodobryoria subdivergens  
subsarmentosa Stirton = A. sarmentosa  
subtilis Motyka = a nomen nudum = Bryoria pseudofuscescens  
tenerrima Motyka = Bryoria fremontii  
tenuis E. Dahl = Bryoria tenuis  
thrausta Ach. = Ramalina thrausta



tortuosa G. Merr. = Bryoria fremontii  
virens auct. = Bryoria fremontii for North American records

**ALLANTOPARMELIA** (Vainio) Essl.

**almquistii** (Vainio) Essl. Syn.: Parmelia almquistii  
**alpicola** (Th. Fr.) Essl. Syn.: Parmelia alpicola  
**sibirica** (Zahlbr.) Essl. (Spribille et al. 2009a)

**ALLARTHONIA** (Nyl.) Zahlbr.

caesia Flotow = Chrysothrix caesia

**ALLOCETRARIA** Kurokawa & Lai

**madreporiformis** (Ach.) Kärnefelt & A. Thell Syns.: Dactylina madreporiformis, Dufourea madreporiformis (Kärnefelt & Thell 1996)  
**stracheyi** (Bab.) Kurok. & M. J. Lai (Thell et al. 2009)  
cucullata (Bellardi) Randlane & Saag = Flavocetraria cucullata  
nivalis (L.) Randlane & Saag = Flavocetraria nivalis  
oakesiana (Tuck.) Randlane & A. Thell = Usnocetraria oakesiana

**ALYXORIA** Ach. (Ertz & Tehler 2011)

**bicolor** (R. C. Harris & Lendemer) Ertz & Tehler (Ertz & Tehler 2011) Syn.: Opegrapha bicolor  
**mugeotii** (A. Massal.) Ertz, Frisch & G. Thor Syn.: Opegrapha mugeotii (Frisch et al. 2014)  
**ochrocheila** (Nyl.) Ertz & Tehler (Ertz & Tehler 2011) Syn.: Opegrapha ochrocheila  
**varia** (Pers.) Ertz & Tehler (Ertz & Tehler 2011) Syns.: Opegrapha diaphora, O. varia

**AMANDINEA** M. Choisy ex Scheid. & H. Mayrhofer

**\*adjuncta** (Th. Fr.) Hafellner Syn.: Buellia adjuncta (Hafellner 2004b)  
**cacuminum** (Th. Fr.) H. Mayrhofer & Sheard Syn.: Rinodina cacuminum (Mayrhofer & Sheard 2002)  
**coniops** (Wahlenb.) M. Choisy ex Scheid. & H. Mayrhofer Syn.: Buellia coniops  
**dakotensis** (H. Magn.) P. May & Sheard Syns.: Rinodina dakotensis, R. finkii, R. inaequalis, R. pennsylvanica, R. pyriniformis, R. subplumbea, R. subpyriniformis. (Sheard & May 1997)  
**efflorescens** (Müll. Arg.) Marbach (Marbach 2000)  
**endachroa** (Malme) Marbach (Lücking et al. 2011bb)  
**langloisii** Imshaug ex Marbach (Marbach 2000) Syn.: Buellia langloisii  
**leucomela** (Imshaug) P. May & Sheard Syns.: Buellia leucoemela (Sheard & May 1997)  
**lignicola** Tønsberg & Nordin (Tønsberg et al. 2012)  
**milliaria** (Tuck.) P. May & Sheard Syn.: Rinodina milliaria (Sheard & May 1997)  
**polyspora** (Willey) E. Lay & P. May Syn.: Buellia polyspora, Buellia punctata var. polyspora (Sheard & May 1997)  
**punctata** (Hoffm.) Coppins & Scheid. Syn.: Buellia punctata, B. myriocarpa  
**subduplicata** (Vainio) Marbach (Marbach 2000)  
**submontana** Marbach (Marbach 2000)  
insperata (Nyl.) H. Mayrhofer & Sheard (Lendemer et al. 2008c) = Orcularia insperata (Kalb & Giralt 2012)  
placodiomorpha (Vainio) Marbach (Marbach 2000) = Orcularia placodiomorpha (Kalb & Giralt 2012)  
turgescens (Nyl.) Marbach (Marbach 2000) = Buellia badia (Bungartz & Nash 2004c)

**AMELIELLA** Fryday & Coppins (Fryday & Coppins 2008)

**andreaeicola** Fryday & Coppins

**AMEROCONIUM** U. Braun & Zhurb.

**\*cladoniae** U. Braun & Zhurb. (Zhurbenko & Braun 2013)

**AMPHILOMA** Nyl.

lanuginosum (Hoffm.) Nyl. = Lepraria membranaceum

**AMPLIOTREMA** Kalb ex Kalb

**auratum** (Tuck.) Kalb ex Kalb (Seavey et al. 2014)

**AMYGDALARIA** Norman

**consentiens** (Nyl.) Hertel, Brodo & Mas. Inoue

**continua** Brodo & Hertel

**elegantior** (H. Magn.) Hertel & Brodo Syns.: *Huilia elegantior*, *Lecidea elegantior*

**haidensis** Brodo & Hertel

**panaeola** (Ach.) Hertel & Brodo Syns.: *Lecidea panaeola*, *Huilia panaeola*

**pelobotryon** (Wahlenb.) Norman Syns.: *Lecanora pelobotrya*, *Aspicilia pelobotrya*, *Lecidea pelobotrya*, L. "pelobotrion"

**subdissentiens** (Nyl.) Mas. Inoue & Brodo

**ANAMYLOPSORA** Timdal

**pulcherrima** (Vainio) Timdal Syns.: *Lecidea pulcherrima*, *Psora pulcherrima*

**ANAPTYCHIA** Körber

**bryorum** Poelt

**crinalis** (Schaerer) Vězda (Esslinger 2007)

**elbursiana** (Szatala) Poelt (Esslinger 2002a) Syn.: *Physconia thomsonii*

**palmulata** (Michaux) Vainio

**ulothricoides** (Vainio) Vainio

*appalachensis* Kurok. = *Heterodermia appalachensis*

*aquila* (Ach.) A. Massal. North American records = *A. palmulata*

*boryi* (Feé) A. Massal. = *Heterodermia boryi*

*casarettiana* A. Massal. = *Heterodermia casarettiana*

*chondroidea* (W. A. Weber & D. D. Awasthi) Kurok. = *Heterodermia chondroidea*

*ciliaris* (L.) Körber = misidentification for North America

*comosa* (Eschw.) A. Massal. North American records = *Heterodermia galactophylla*

*corallophora* (Taylor) Lynge = *Heterodermia crocea* (for North American records)

*dendritica* (Pers.) Vainio = *Heterodermia dendritica*

*diademata* (Taylor) Kurok. = *Heterodermia diademata*

*domingensis* (Ach.) A. Massal. = *Heterodermia albicans*

*echinata* (Taylor) Kurok. = *Heterodermia echinata*

*erinacea* (Ach.) Trevisan = *Heterodermia erinacea*

*galactophylla* (Tuck.) Trevisan = *Heterodermia galactophylla*

*granulifera* (Ach.) A. Massal. = *Heterodermia granulifera*

*heterochroa* Vainio = *Heterodermia obscurata*

*hypoleuca* (Muhl.) A. Massal. = *Heterodermia hypoleuca*

*hypoleuca* (Muhl.) A. Massal. var. *colorata* Zahlbr. = *Heterodermia obscurata*

*isidiza* Kurok. (Yoshimura & Sharp 1973) = *A. isidiata* Tomin, but a misidentification for North America (Esslinger 2007)

*kaspica* Gyelnik = *A. setifera*, but North American reports are *A. crinalis*

*leucomela* (L.) A. Massal. = *Heterodermia leucomela*

"*leucomelaena*" auct. = *Heterodermia leucomela*

*major* (Nyl.) Vainio = misidentification for North America

*neoleucomelaena* Kurok. = *Heterodermia boryi*

*obscurata* (Nyl.) Vainio = *Heterodermia obscurata*

"*palmatula*" auct. = *A. palmulata*

*pseudospeciosa* Kurok. = *Heterodermia pseudospeciosa*

*pseudospeciosa* Kurok. var. *tremulans* (Müll. Arg.) Kurok. = *Heterodermia speciosa*

*ravenelii* (Tuck.) Zahlbr. = *Heterodermia albicans*

*setifera* Räsänen North American reports are *A. crinalis*

*sorediifera* (Müll. Arg.) Du Rietz & Lynge = *Heterodermia obscurata*

*speciosa* (Wulfen) A. Massal. = *Heterodermia speciosa*

*squamulosa* Degel. = *Heterodermia squamulosa*



stippaea (Ach.) Nadv. = *A. bryorum*  
tropica Kurok. = *Heterodermia tropica*  
wrightii (Tuck.) Zahlbr. North American report (Tuckerman 1882) is *Heterodermia diademata*  
(Esslinger & Tucker 2009)

**ANDREIOMYCES** Hodkinson & Lendemer (Hodkinson & Lendemer 2013)  
**morozeianus** (Lendemer) Hodkinson & Lendemer Syn.: *Lepraria morozeianus*

**ANEMA** Nyl. ex Forssell  
**progidulum** (Nyl.) Henssen (Schultz 2002a)  
dodgei Herre = *Heppia despreauxii* (Schultz 2007b)  
jenisejensis H. Magn. = misidentification for North America

**ANISOMERIDIUM** (Müll. Arg.) M. Choisy  
**albisedum** (Nyl.) R. C. Harris Syn.: *Ditremis albiseda*  
**ambiguum** (Zahlbr.) R. C. Harris Syn.: *Arthopyrenia ambigua*, *Ditremis ambigua*  
**anisolobum** (Müll. Arg.) Aptroot Syn.: *Arthopyrenia anisoloba*, *Ditremis anisoloba*  
**aureopunctatum** R. C. Harris Syn.: *Ditremis macrospora* R. C. Harris non Makhija & Patwardhan  
(Harris 1995a)  
**biforme** (Borrer) R. C. Harris Syn.: *Arthopyrenia biformis*, *A. parvula*, *A. conformis* auct. N. Am.,  
*Ditremis biformis*, *Trimmatothela umbellulariae*  
**biformoides** R. C. Harris (Harris 1995a)  
**carinthiacum** (J. Steiner) R. C. Harris Syn.: *Arthopyrenia carinthiaca*, *A. dimidiata*, *Ditremis*  
*carinthiaca*  
**distans** (Willey) R. C. Harris Syn.: *Arthopyrenia distans*, *Ditremis distans*  
**excaecariae** (Müll. Arg.) R. C. Harris Syn.: *A. sanfordense*, *Arthopyrenia sanfordensis*, *Ditremis*  
*sanfordensis* (Harris 1995a)  
**finkii** (R. C. Harris) R. C. Harris Syn.: *Ditremis finkii* (Harris 1995a)  
**griffinii** R. C. Harris (Harris 1995a)  
**leucochlorum** (Müll. Arg.) R. C. Harris Syn.: *Arthopyrenia leucochlora*, *Ditremis leucochlora*  
[***Ditremis macrospora*** R. C. Harris]  
**phaeospermum** R. C. Harris (Harris 1995a)  
**polypori** (Ellis & Everh.) M. E. Barr Syn.: *Ditremis nyssigena*, *Arthopyrenia willeyana* (Barr et al.  
1996)  
**quadricoccum** R. C. Harris (Harris 1995a, Aptroot 1997)  
**quaternarium** (R. C. Harris) R. C. Harris Syn.: *Ditremis quaternaria* (Harris 1995a)  
**subnexum** (Nyl.) R. C. Harris (Lücking et al. 2011b)  
**subprostans** (Nyl.) R. C. Harris Syn.: *Arthopyrenia subprostans*, *Ditremis subprostans*, *Pyrenula*  
*subprostans*.  
**tamarindi** (Fée) R. C. Harris Syn.: *Ditremis tamarindi*.  
**terminatum** (Nyl.) R. C. Harris Syn.: *Ditremis terminata*, *Pleurotrema anacardii*, *Arthopyrenia*  
*anacardii* (Harris 1995a)  
**tuckerae** R. C. Harris Syn.: *Ditremis tuckerae*.  
feeanum (Müll. Arg.) R. C. Harris = *A. anisolobum*  
juistense (Erichsen) R. C. Harris = *A. polypori*  
nyssigenum (Ellis & Everh.) R. C. Harris = *A. polypori*  
sanfordense (Zahlbr.) R. C. Harris = *Anisomeridium excaecariae*

**ANOMALOBARIA** B. Moncada & Lücking (Moncada et al. 2013) = **LOBARIA** (McCune et al. 2014b;  
Miadlikowska et al. 2014a)  
anomala (Brodo & Ahti) B. Moncada & Lücking = *Lobaria anomala* (McCune et al. 2014b)  
anthraspis (Ach.) B. Moncada & Lücking = *Lobaria anthraspis* (McCune et al. 2014b)

**ANOMOMORPHA** Nyl.  
**turbulenta** (Nyl.) Hue Syn.: *Graphis turbulenta* (Staiger 2002)

**ANTHRACOTHECIUM** Hampe ex A. Massal.

- australiensis** (Müll. Arg.) Aptroot (Aptroot 2012)
- pachycheilum** (Tuck.) Zahlbr. Syn.: *Pyrenula pachycheila* (Tuckerman 1872)
- prasinum** (Eschw.) R. C. Harris
- staurosporum** (Tuck. ex Willey) Zahlbr.
- canellae-albae* (Fée) Müll. Arg. = *Sulcopyrenula canellae-albae*
- corticatum* Müll. Arg. = *Pyrenula confinis*
- falsarium* Zahlbr. = *Pyrenula schiffneri*
- leucostomum* (Ach.) Malme = *Pyrenula leucostoma*
- libricola* (Fée) Müll. Arg. = probable misidentification for North American
- maculare* Zahlbr. = *Pyrenula breutelii*
- mucosum* (Vainio) Zahlbr. = probable misidentification for North American
- nanum* (Zahlbr.) R. C. Harris = *A. australiensis*
- ochraceoflavens* (Nyl.) Zahlbr. = *Pyrenula ochraceoflavens*
- ochraceoflavum* (Nyl.) Müll. Arg. = *Pyrenula ochraceoflava*
- pauciloculare* Herre = identity uncertain
- pyrenuloides* (Mont.) Müll. Arg. = *Pyrenula pyrenuloides*
- subglobosum* Riddle = *Sulcopyrenula subglobosa*
- thelomorphum* (Tuck.) Zahlbr. = *Pyrenula thelomorpha*
- varians* R. C. Harris = *Pyrenula novemseptata*

**ANZIA** Stizenb.

- americana** Yoshim. & Sharp
- colpodes** (Ach.) Stizenb. Syn.: *Parmelia colpodes*
- ornata** (Zahlbr.) Asahina

**ANZINA** Scheid.

- carneonivea** (Anzi) Scheid. (Goward et al. 1996)
- carneonivea** var. **tetraspora** Scheid. (Spribille et al. 2010)

**APATOPLACA** Poelt & Hafellner = **CALOPLACA**

- oblongula* (H. Magn.) Poelt & Hafellner = *Caloplaca oblongula*

**ARCTOCETRARIA** Kärnefelt & A. Thell

- andrejevii** (Oxner) Kärnefelt & A. Thell Syn.: *Cetraria andrejevii*, *C. simmonsii*
- nigricascens** (Nyl.) Kärnefelt & A. Thell Syn.: *Cetraria nigricascens*, *C. elenkinii*, *C. sibirica*

**ARCTOMIA** Th. Fr.

- delicatula** Th. Fr.
- interfixa** (Nyl.) Vainio

**ARCTOPARMELIA** Hale

- centrifuga** (L.) Hale Syns.: *Parmelia centrifuga*, *P. aleuritica*, *Parmelia halseyana*, *Xanthoparmelia centrifuga*
- incurva** (Pers.) Hale Syns.: *Parmelia incurva*, *Xanthoparmelia incurva*
- separata** (Th. Fr.) Hale Syns.: *Parmelia separata*, *P. birulae* var. *grumosa*, *Xanthoparmelia separata*
- subcentrifuga** (Oxner) Hale Syns.: *Parmelia subcentrifuga*, *Xanthoparmelia subcentrifuga*
- aleuritica* (Nyl.) Hale = *A. centrifuga*

**ARCTOPELTIS** Poelt

- thuleana** Poelt

**ARRHENIA** Fr.

- \***peltigerina** (Peck) Redhead, Lutzoni, Moncalvo & Vilgalys Syn.: *Omphalina peltigerina* (Redhead et al. 2002)



## **ARTHONIA** Ach.

- albofuscens** Tuck.
- <sup>+</sup>**albopulverea** Nyl. (Grube 2007)
- albovirescens** Nyl. Syn.: *Arthothelium albovirescens*
- aleuromela** Nyl.
- <sup>\*</sup>**almquistii** Vainio (Zhurbenko 2013)
- anglica** Coppins (Hodkinson et al. 2009, Lendemer et al. 2009c)
- <sup>\*</sup>**anjutii** S. Y. Kondr. & Alstrup (Kondratyuk 1996)
- antillarum** (Fée) Nyl. (Lücking et al. 2011b)
- apatetica** (A. Massal.) Th. Fr.
- arthonioides** (Ach.) A. L. Sm.
- asteriscus** Müll. Arg.
- atomaria** (Lynge) R. Kilius
- atra** (Pers.) A. Schneider (Ertz et al. 2009) Syn.: *Opegrapha atra*
- atrata** (Fée) Müll. Arg.
- <sup>+</sup>**beccariana** (Bagl.) Stizenb. (Grube 2007)
- <sup>\*</sup>**biatoricola** Ihlen & Owe-Larsson (Ihlen et al. 2004b)
- calcareo** (Turner ex Sm.) Ertz & Diederich (Ertz et al. 2009) Syn. : *Opegrapha calcarea*
- caribea** (Ach.) A. Massal.
- <sup>+</sup>**caudata** Willey
- <sup>\*</sup>**ceracea** Etayo & Breuss (Etayo & Breuss 1998)
- cinereopruinosa** Schaerer
- cinnabarina** (DC.) Wallr.
- <sup>\*</sup>**circinata** Th. Fr. ([Villella & Sheehy 2015](#))
- <sup>\*</sup>**clemens** (Tul.) Th. Fr.
- <sup>\*</sup>**colombiana** Etayo (Lendemer & Harris 2012)
- compensata** Nyl. (Hansen & Dute 2005)
- compensatula** Nyl. (Seavey & Seavey 2012)
- complanata** Fée
- conferta** (Fée) Nyl.
- <sup>\*</sup>**coronata** Etayo (Lendemer & Harris 2012)
- cupressina** Tuck.
- cyrtodes** Nyl. (Lendemer et al. 2009c)
- <sup>+</sup>**cytisi** A. Massal.
- didyma** Körber
- diffusa** Nyl.
- diffusella** Fink
- <sup>\*</sup>**digitatae** Hafellner (Knudsen & Lendemer 2007)
- <sup>\*</sup>**diploiciae** Calat. & Diederich (Grube 2007, Lendemer et al. 2009b)
- dispersa** (Schrader) Nyl.
- dispersula** Nyl.
- eckfeldtii** Müll. Arg.
- <sup>\*</sup>**epicladonia** (Nyl.) Alstrup & Zhurb. (Zhurbenko & Alstrup 2004)
- <sup>\*</sup>**epimela** (Almq.) I. M. Lamb (Goward et al. 1996)
- <sup>\*</sup>**epiphyscia** Nyl.
- erubescens** Willey
- erupta** Nyl.
- excedens** Nyl.
- <sup>\*</sup>**excentrica** Th. Fr. (Hafellner et al. 2002)
- exilis** (Flörke) Anzi
- <sup>\*</sup>**farinacea** (H. Olivier) R. Sant. (Diederich 2003)
- fissurinea** Nyl.
- floridana** Willey
- fuliginosa** (Schaerer) Flotow
- <sup>\*</sup>**fuscopurpurea** (Tul.) R. Sant. (Alstrup & Cole 1998)
- <sup>\*</sup>**gelidae** R. Sant. (Spribille et al. 2010)

**gerhardii** Egea & Torrente (Grube 2007)  
<sup>+</sup>**glaucella** Nyl. (Grube 2007)  
**glebosa** Tuck.  
**granosa** B. de Lesd.  
**gyalectoides** Müll. Arg.  
**hamamelidis** Nyl.  
**helvola** (Nyl.) Nyl. (Harris 1977)  
**hypobela** (Nyl.) Zahlbr.  
**ilicina** Taylor Syn.: *Arthothelium ilicinum*  
**impallens** Nyl.  
**incarnata** Th. Fr. ex Almq.  
**infectans** Egea & Torrente (Egea & Torrente 1995)  
**intervenians** Nyl. Syn.: *Arthothelium intervenians* (Lücking et al. 2011b)  
<sup>\*</sup>**intexta** Almq.  
**kermesina** R. C. Harris, E. Tripp & Lendemer (Lendemer et al. 2013)  
**lapidicola** (Taylor) Branth & Rostrup  
**lecanactidea** Zahlbr.  
<sup>\*</sup>**lecanorina** (Almq.) Grube (Grube 2007)  
<sup>\*</sup>**lethariicola** Alstrup & M. S. Cole (Alstrup & Cole 1998)  
**leucastraea** Tuck.  
**leucopellaea** (Ach.) Almq.  
**ligniariella** Coppins (Spribille & Björk 2008)  
<sup>\*</sup>**linitae** R. Sant. (Esslinger & Egan 1995)  
**luridoalba** Nyl.  
**macounii** G. Merr. (Kocourková et al. 2008) Syn.: *Arthothelium macounii*  
**macrotheca** Fée (Lücking et al. 2011b) Syn.: *Arthothelium macrothecum*  
**madreana** Egea & Torrente (Egea & Torrente 1995)  
**mediella** Nyl.  
**mesoleuca** Nyl. (Lücking et al. 2011b)  
**microspERMella** Willey  
**mirabilis** Grube (Lücking et al. 2011b)  
<sup>\*</sup>**molendoi** (Heufl. ex Frauenf.) R. Sant. (Alstrup & Cole 1998; Hafellner et al. 2002)  
**neoni** B. de Lesd.  
<sup>\*</sup>**nephromaria** (Nyl.) Nyl. ex H. Olivier  
**ochrocincta** Willey  
**ochrodiscodes** Nyl.  
**ochrolutea** Nyl.  
**ochrospila** Nyl. (Seavey & Seavey 2012)  
**oxytera** Nyl. (Fink 1935, Esslinger & Tucker 2009)  
**palmulacea** (Müll. Arg.) R. Sant.  
**patellulata** Nyl.  
<sup>\*</sup>**peltigerea** Th. Fr. (Hafellner et al. 2002)  
<sup>\*</sup>**peltigerina** (Almq.) H. Olivier  
**perminuta** Willey  
**phaeobaea** (Norman) Norman  
<sup>\*</sup>**phaeophysciae** Grube & Matzer (Hafellner et al. 2002)  
**phlyctiformis** Nyl. subsp. **californica** Grube (Grube 2007)  
<sup>+</sup>**pinastri** Anzi  
**platygraphidea** Nyl.  
**platyspilea** Nyl.  
**polygramma** Nyl.  
**polymorpha** Ach.  
<sup>\*</sup>**protoparmeliopseos** Etayo & Diederich (Kocourková & Knudsen 2015)  
<sup>+</sup>**pruinascens** (Zahlbr.) Grube (Grube 2007) Syn.: *Arthothelium pruinascens*  
**pruinata** (Pers.) Steud. ex A. L. Sm. (Grube 2007)  
<sup>+</sup>**pruinoseella** Nyl. (Grube 2007)



**pruinosa** Nyl.  
**punctiformis** Ach.  
**pyrrhuliza** Nyl.  
<sup>+</sup>**quintaria** Nyl.  
**radiata** (Pers.) Ach.  
**ravenelii** Tuck.  
**redingeri** Grube (Grube 2007)  
**reniformis** (Pers.) Ach.  
<sup>+</sup>**rhoidis** Zahlbr. (Grube 2007)  
**rubella** (Fée) Nyl.  
**rubrocincta** G. Merr. ex Grube & Lendemer (Grube & Lendemer 2009)  
**rupicola** Fink  
<sup>+</sup>**sanguinea** Willey (Grube 2007) Syn.: *Arthothelium sanguineum*  
**septiseptella** Nyl. (Fink 1935, Esslinger & Tucker 2009)  
<sup>+</sup>**sexlocularis** Zahlbr. (Grube 2007)  
**siderea** Degel.  
**simplicascens** Nyl. (Lücking et al. 2011b)  
**spadicea** Leighton  
**speciosa** (Müll. Arg.) Grube (Grube 2007)  
**stellaris** Kremp.  
<sup>\*</sup>**stereocaulina** (Ohlert) R. Sant. (Zhurbenko 2010)  
**subastroidella** Nyl.  
**subdiffusa** Willey  
**subdispuncta** Nyl.  
<sup>\*</sup>**subfuscicola** (Lindsay) Triebel  
**subminutissima** Nyl.  
**subminutula** Nyl.  
**subrubella** Nyl.  
**susa** R. C. Harris & Lendemer Syn.: *Arthothelium taediosum* auct. N.A. (Lendemer et al. 2013)  
**taedescens** Nyl.  
**terrigena** Nyl.  
<sup>+</sup>**tetramera** (Stizenb.) Hasse (Grube 2007)  
**torulosa** Fée  
**tuckermaniana** Willey  
**varia** (Ach.) Nyl.  
<sup>\*</sup>**varians** (Davies) Nyl. Syn.: *Celidium varians* (Hawksworth 2003)  
**vernans** Willey  
**vinosa** Leighton  
**viridicans** Willey  
<sup>\*</sup>**xanthoparmeliarum** Etayo (Kocourková 2009)  
**xylographica** Nyl.  
**alba** Müll. Arg. = *a Stirtonia* sp.  
**aspera** Leighton = *A. arthonioides*  
**atractospora** Zahlbr. = *Naetrocymbe atractospora*  
**biseptata** Degel. = *Mycoporum biseptatum* (Lendemer & Harris 2014c)  
**byssacea** (Weigel) Almq. = *Inoderma byssaceum* (Weigel) Gray (Frisch et al. 2015)  
**caesia** (Flotow) Körber = *Chrysothrix caesia*  
**carneorufa** Willey = *Catillaria erysiboides*  
**chiodectella** Nyl. = *A. pruinata* (Grube 2007)  
**convexella** Nyl. = a non-lichenized fungus (*Mycoporum* sp.?)  
**epipastoides** auct. N.A. non Nyl. = *A. glaucella* (Grube 2007)  
**fusca** (A. Massal.) Hepp = *A. lapidicola*  
**galactitella** Nyl. = *A. glaucella* (Grube 2007)  
**glaucescens** Nyl. = *Schismatomma glaucescens*  
**glaucumaria** (Nyl.) Nyl. = *A. varians* (Hawksworth 2003)  
**gregaria** (Weigel) Körber = *A. cinnabarina*

gregarina Willey = Coniarthonia gregarina  
 impolita (Hoffm.) Borrer = A. pruinata  
 lecideella Nyl. ex Willey = Chrysothrix caesia (Lendemer 2008)  
 leucodontis (Poelt & Döbb.) Coppins = [Bryostigma muscigena](#)  
 lurida Ach. nom. rej. = A. spadicea  
 melaspora Tuck. = Sporostigma melaspora (Grube 2001)  
 montagnei (Tuck.) R. C. Harris = uncertain species of Cryptothecia? (Lücking et al. 2011b)  
[muscigena Th. Fr. = Bryostigma muscigena](#)  
 pyrrhula Nyl. = Coniarthonia pyrrhula  
 spectabilis Flotow = Arthothelium spectabile  
 +stictella Stizenb. = A. albopulverea (Grube 2007)  
 taediosa Nyl. North American reports are Arthonia susa (Lendemer et al. 2013)  
[tremelloides Etayo Erroneously listed here; reported only from Mexico \(Grube 2007\)](#)  
 tumidula (Ach.) Ach. = A. cinnabarina  
[verrucosa Egea & Torrente Erroneously listed here; reported only from Mexico \(Grube 2007\)](#)  
 willeyi Tuck. = A. diffusa (Lendemer 2004a)

#### ARTHOPHACOPSIS Hafellner

\***parmeliarum** Hafellner (Diederich 2003, Zhurbenko & Laursen 2003)

#### ARTHOPYRENIA A. Massal.

+**analepta** (Ach.) A. Massal. (Harris 1995a, Aptroot 2002a) Syn.: Polyblastiopsis fallax  
**betulicola** R. C. Harris, E. Tripp & Lendemer (Harris et al. 2014)  
**cerasi** (Schrader) A. Massal.  
**cinchonae** (Ach.) Müll. Arg. Syn.: Pyrenula cinchonae (Ach.) Tuck. non Fée  
**cinereopruinosa** (Schaerer) A. Massal.  
**confluens** R. C. Harris (Harris 1995a)  
**degelii** R. C. Harris (Harris 1995a)  
**esenbeckiana** (Fée) R. C. Harris (Harris 1995a)  
**exasperata** R. C. Harris (Harris 1995a)  
**lyrata** R. C. Harris  
**majuscula** (Nyl.) Zahlbr.  
**malaccitula** (Nyl.) Zahlbr.  
**minor** R. C. Harris  
**oblongens** R. C. Harris (Harris 1995a)  
**planorbis** (Ach.) Müll. Arg.  
 +**plumbaria** (Stizenb. ex Hasse) R. C. Harris Syn.: Porina plumbaria, Pyrenula herrei  
**rappii** Zahlbr.  
 +**subcerasi** (Vainio) Zahlbr. (Spribille et al. 2010)  
**taxodii** R. C. Harris (Harris 1995a)  
 \***texensis** (Cooke) D. Hawksw.  
 affinis (A. Massal.) R. C. Harris = Strigula affinis North American records are S. jamesii  
 alba (Schrader) Zahlbr. = Acrocordia gemmata  
 ambigua Zahlbr. = Anisomeridium ambiguum  
 anacardii Vainio = Anisomeridium terminatum  
 analeptella (Nyl.) Arnold = misidentification for North America  
 anisoloba Müll. Arg. = Anisomeridium anisoloba  
 antecellens (Nyl.) Arnold = Mycoporum antecellens  
 atomarioides Müll. Arg. = Naetrocymbe atomarioides  
 atractospora Zahlbr. = Naetrocymbe atractospora  
 bifera Zahlbr. = A. malaccitula  
 biformis (Borrer) A. Massal. = Anisomeridium biforme  
 bryospila (Nyl.) Arnold = Collemopsidium bryospilum  
 carinthiaca J. Steiner = Anisomeridium carinthiacum  
 cavata (Ach.) R. C. Harris = Acrocordia cavata  
 conformis (Nyl.) Müll. Arg. = misidentification for North America, mostly Anisomeridium biforme



conoidea (Fr.) Zahlbr. = *Acrocordia conoidea*  
 dimidiata Fink = *Anisomeridium carinthiacum*  
 distans (Willey) Zahlbr. = *Anisomeridium distans*  
 epidermidis (DC.) A. Massal. = *Naetrocymbe punctiformis*  
 faginea (Schaerer) Swinscow = *Strigula stigmatella*  
 fallax (Nyl.) Arnold = *A. analepta*  
 finkii Zahlbr. = *Acrocordia megalospora*  
 floridana Zahlbr. = *Naetrocymbe atomarioides*  
 fraxini A. Massal. = *Naetrocymbe fraxini*  
 gemmata (Ach.) A. Massal. = *Acrocordia gemmata*  
 halodytes (Nyl.) Arnold = *Collemopsidium halodytes*  
 hyalospora (Nyl.) Fink = *Lithothelium hyalosporum*  
 lapponina Anzi = *A. analepta*  
 leucochlora Müll. Arg. = *Anisomeridium leucochlorum*  
 litoralis (Leighton) Arnold (Fink 1935) = *Collemopsidium sublitorale* (Santesson et al. 2004)  
 macrocarpa (Körber) Zahlbr. = misidentification for North America  
 macrospora Fink = *Acrocordia megalospora*  
 megalospora Lonnr. = *Naetrocymbe megalospora*  
 mycoporoides Müll. Arg. = *Mycoporum mycoporoides*  
 padi Rabenh. = *Naetrocymbe punctiformis*  
 parvula Zahlbr. = *Anisomeridium biforme*  
 pinicola (Hepp) A. Massal. = *A. cinereopruinosa*  
 prosperella (Nyl.) Zahlbr. = *Pyrenocollema prosperella*  
 punctiformis (Pers.) A. Massal. = *Naetrocymbe punctiformis*  
 quinqueseptata (Nyl.) Müll. Arg. = *Polymeridium quinqueseptatum*  
 rhypona (Ach.) A. Massal. (Aptroot 2002a) = *Naetrocymbe rhypona*  
 salicis A. Massal. = Identity uncertain (Harris 1995a)  
 sanfordensis Zahlbr. = *Anisomeridium excaecariae*  
 sphaeroides (Wallr.) Zahlbr. = *Acrocordia gemmata*  
 sublitoralis (Leighton) Arnold = *Collemopsidium sublitoralis*  
 submuriformis R. C. Harris = *Strigula submuriformis*  
 subprostans (Nyl.) Müll. Arg. = *Anisomeridium subprostans*  
 subpunctiformis Nyl. = *A. atomarioides*  
 tenuis R. C. Harris = *Strigula americana*  
 tichothecioides Arnold = *Pyrenocollema tichothecioides*  
 willeyana R. C. Harris = *Anisomeridium polypori*

#### **ARTHOTHELIOPSIS** Vainio

**floridensis** Lücking & W. R. Buck (Lücking et al. 2007)  
**planicarpa** (Lücking) Lücking, Sérus. & Vězda (Lücking et al. 2007) A tentative report.

#### **ARTHOTHELIUM** A. Massal.

**abnorme** (Ach.) Müll. Arg.  
**adveniense** Nyl.  
**anastomosans** (Ach.) Arnold  
**distendens** (Nyl.) Müll. Arg.  
**hallii** (Tuck.) Zahlbr.  
**lichenale** (Peck) M. E. Barr (Barr et al. 1986)  
**norvegicum** Coppins & Tønsberg (Tønsberg & Williams 2006)  
**orbilliferum** (Almq.) Hasse  
**ruanum** (A. Massal.) Körber  
**spectabile** (Flotow) A. Massal. Syn.: *Arthonia spectabilis*  
**subcyrtodes** (Willey) Hasse  
**violascens** (Nyl.) Zahlbr.  
 albovirescens (Nyl.) Fink = *Arthonia albovirescens*  
 gregarinum (Willey) Zahlbr. = *Coniarthonia gregarina*

ilicinum (Taylor) P. James = Arthonia ilicina  
 interveniens (Nyl.) Zahlbr. = Arthonia interveniens  
 macounii (G. Merr.) W. Noble = Arthonia macounii  
 macrothecum (Fée) A. Massal. = Arthonia macrothecum  
 +pruinascens Zahlbr. = Arthonia pruinascens (Grube 2007)  
 ruanideum (Nyl.) Arnold = A. ruanum  
 +sanguineum (Willey) Zahlbr. = Arthonia sanguinea (Grube 2007)  
 taediosum (Nyl.) Müll. Arg. North American reports are Arthonia susa (Lendemer et al. 2013)

#### **ARTHROPHAPHIS** Th. Fr.

\***aeruginosa** R. Sant. & Tønsberg  
**alpina** (Schaerer) R. Sant. Syn.: Bacidia alpina  
**citrinella** (Ach.) Poelt Syn.: Bacidia citrinella, B. flavovirescens  
 #**grisea** Th. Fr. Syn.: Lahmia fueistingii

#### **ARTHROSPORUM** A. Massal.

**populorum** A. Massal. Syns.: Bacidia populorum, B. acclinis, Bilimbia acclinis  
 accline (Flotow) A. Massal. = A. populorum

#### **ASAHINEA** W. L. Culb. & C. F. Culb.

**chrysantha** (Tuck.) W. L. Culb. & C. F. Culb. Syn.: Cetraria chrysantha  
**scholanderi** (Llano) W. L. Culb. & C. F. Culb. Syn.: Cetraria scholanderi

#### **ASPICILIA** A. Massal.

**albomarginata** B. de Lesd. Syn.: Lecanora albomarginata  
 [**Lecanora albopruinosa** Looman]  
**alboradiata** (H. Magn.) Oxner Syn.: Lecanora alboradiata  
**aliena** (Zahlbr.) Oxner Syn.: Lecanora aliena  
**americana** B. de Lesd. Syn.: Lecanora americana  
**anglica** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**annulata** (Lynge) J. W. Thomson Syn.: Lecanora annulata  
**anseris** (Lynge) J. W. Thomson Synonym: Lecanora anseris  
**aquatica** Körber Syn.: Lecanora aquatica  
**arctica** (Lynge) Oxner Syn.: Lecanora arctica  
**arizonica** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)  
**aspera** (Mereschk.) Tomin (McCune et al. 2014b)  
**aurantiaca** Owe-Larsson & A. Nordin (Knudsen et al. 2008b)  
**berntii** A. Nordin, Tibell & Owe-Larsson Syn.: Lecanora mastoidea (Nordin et al. 2008)  
**bicensis** [F. Anderson & Lendemer \(Anderson & Lendemer 2016\)](#)  
**boykinii** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**brucei** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**caesiopruinosa** (H. Magn.) J. W. Thomson Syn.: Lecanora caesiopruinosa  
**californica** Rosentreter (Rosentreter 1998)  
**candida** (Anzi) Hue Syn.: Lecanora candida  
**cinerea** (L.) Körber Syn.: Lecanora cinerea  
**cingulata** (Zahlbr.) Oxner Syn.: Lecanora cingulata  
**composita** (Lynge) J. W. Thomson Syn.: Lecanora composita  
**concinna** (J. W. Thomson) J. W. Thomson (Thomson 1997)  
**confusa** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**contigua** (Lynge) J. W. Thomson  
**cuprea** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)  
**curvabilis** (Nyl.) Hue (Hansen 2006)  
**cyanescens** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**determinata** (H. Magn.) N. S. Golubk. (Owe-Larsson et al. 2007)  
**disserpens** (Zahlbr.) Räsänen Syn.: Lecanora disserpens  
**elevata** (Lynge) J. W. Thomson Syn.: Lecanora elevata



**filiformis** Rosentreter (Rosentreter 1998)  
**fimbriata** (H. Magn.) Clauzade & Rondon Syn.: *Lecanora fimbriata*  
**fumosa** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**glaucopsina** (Nyl. ex Hasse) Hue (Knudsen 2005b, Owe-Larsson et al. 2007)  
**grisea** Arnold (Fryday 2001)  
**heteroplaca** (Zahlbr.) Oxner Syn.: *Lecanora heteroplaca*  
**humboldtii** (Lynge) J. W. Thomson  
**intermutans** (Nyl.) Arnold (McCune et al. 2014b)  
**karellica** (H. Magn.) Oxner  
**knudsenii** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**laevata** (Ach.) Arnold Syn.: *Lecanora laevata*  
**laxula** (H. Magn.) Brodo  
**lesleyana** Darb. Syn.: *Lecanora lesleyana*  
**limitata** (H. Magn.) J. W. Thomson Syn.: *Lecanora limitata*  
**mansourii** Sohrabi (McCune et al. 2014b)  
**mashiginensis** (Zahlbr.) Oxner  
**mazarina** (Wahlenb.) R. Sant.  
**narssaquensis** (Lynge) J. W. Thomson Syn.: *Lecanora basaltica*, *L. narssaquensis*  
**nashii** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**nathorstii** (Lynge) J. W. Thomson  
**nikrapensis** Darb. Syn.: *Lecanora nikrapensis*  
**nordlandica** (H. Magn.) Degel.  
**novae-semlicae** (Zahlbr.) Oxner Syn.: *Lecanora novae-semlicae*  
**olivaceobrunnea** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**olivaceopallida** (H. Magn.) Lendemer (Lendemer et al. 2013)  
**pacifica** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)  
**peltastictoides** (Hasse) K. Knudsen & Kocourk. (Knudsen & Kocourková 2013) Syn.: *Lecanora peltastictoides*  
**pergibbosa** (H. Magn.) Räsänen Syn.: *Lecanora pergibbosa*  
**perradiata** (Nyl.) Hue Syn.: *Lecanora perradiata*  
**pertusa** (Lynge) J. W. Thomson Syn.: *Lecanora pertusa*  
**phaea** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)  
**plicigera** (Zahlbr.) Räsänen Syn.: *Lecanora plicigera*  
**polychroma** Anzi Syn.: *Lecanora polychroma*  
**praecrenata** (Nyl. ex Hasse) Hue Syn.: *Lecanora praecrenata* (Owe-Larsson et al. 2007, Knudsen et al. 2008b)  
**reptans** (Looman) Wetmore Syn.: *Lecanora reptans*:  
**rolleana** Hue Syn.: *Lecanora rolleana*  
**rosulata** Körber Syn.: *Lecanora rosulata*  
**ryrkaipiae** (H. Magn.) Oxner Syn.: *Lecanora ryrkaipiae*  
**santamonicae** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007, Knudsen et al. 2008b)  
**sipeana** (H. Magn.) Owe-Larsson & A. Nordin Syn.: *Lecanora sipeana* (Owe-Larsson et al. 2007)  
**sorediza** (Lynge) J. W. Thomson  
**sublapponica** (Zahlbr.) Oxner Syn.: *Lecanora sublapponica*  
**submersa** (Lamy) Hue  
**subplicigera** (H. Magn.) Oxner  
**subradians** (Nyl.) Hue Syn.: *Lecanora stygioplaca*, *L. subradiascens*, *L. subradians*  
**substictica** Owe-Larsson & A. Nordin (Owe-Larsson et al. 2007)  
**supertegens** Arnold Syn.: *Lecanora supertegens*  
**tenuis** (H. Magn.) Owe-Larsson & A. Nordin Syn.: *Lecanora tenuis* (Owe-Larsson et al. 2007)  
**verrucigera** Hue Syn.: *Lecanora verrucigera*  
 alphoplaca (Wahlenb.) Poelt & Leuckert = *Lobothallia alphoplaca*  
 alpina (Sommerf.) Arnold = *Bellemerea alpina*  
 bennettii (Lynge) J. W. Thomson = *A. mashiginensis*  
 caesiocinerea (Nyl. ex Malbr.) Arnold = *Circinaria caesiocinerea*  
 calcarea (L.) Körber = *Circinaria calcarea*

cinereorufescens (Ach.) A. Massal. = Bellemerea cinereorufescens  
 contorta (Hoffm.) Kremp. = Circinaria contorta  
 desertorum (Kremp.) Mereschk. North American reports are Circinaria arida (Owe-Larsson et al. 2011)  
 diamarta (Ach.) Boistel = Bellemerea diamarta  
 excavata G. Thor & Timdal = Acarospora moenium  
 flavida (Hepp) Rehm = Eiglera flavida  
 fruticulosa (Eversm.) Flagey = Circinaria rogeri for N.A. reports  
 gibbosa (Ach.) Körber = Circinaria gibbosa  
 hispida Mereschk. = Circinaria hispida  
 lacustris (With.) Th. Fr. = Ionaspis lacustris  
 leproscens (Sandst.) Hav. = Circinaria leproscens  
 mastoidea (Lynge) J. W. Thomson = A. berntii (Nordin et al. 2008)  
 mastrucata (Wahlenb.) Th. Fr. (Wetmore 1967) = Sagedia mastrucata  
 melanaspis (Ach.) Poelt & Leuckert = Lobotheallia melanaspis  
 melinodes Körber = Porpidia melinodes  
 moenium (Vainio) G. Thor & Timdal = Acarospora moenium (Nordin et al. 2009)  
 myrinii (Fr.) Stein = Aspilidea myrinii  
 pelobotrya (Wahlenb.) Th. Fr. = Amygdalaria pelobotryon  
 praeradiosa (Nyl.) Poelt & Leuckert = Lobotheallia praeradiosa  
 quartzitica W. A. Weber = Schaereria fuscocinerea (Owe-Larsson et al. 2007)  
 radiosa (Hoffm.) Poelt & Leuckert = Lobotheallia radiosa  
 rogeri Sohrabi (Sohrabi et al. 2013b) = Circinaria rogeri  
 sanguinea Kremp. = Bellemerea sanguinea  
 simoënsis Räsänen (Owe-Larsson et al. 2007) = Sagedia simoënsis  
 stygioplaca (Nyl.) Hue = A. subradians  
 subradiascens (Nyl.) Hue = A. subradians  
 subsorediza (Lynge) R. Sant. = Bellemerea subsorediza  
 uxoris (Werner) V. J. Rico (Shrestha & St. Clair 2009) North American report = Teuvoa junipericola (Sohrabi et al. 2013a)

#### **ASPIDOTHELIUM** Vainio

**cinerascens** Vainio (Lücking et al. 2011b)  
**geminiparum** (Malme) R. Sant. (Lücking et al. 2011b)  
**scutellarpum** Lücking (Lücking et al. 2011b)  
**fugiens** (Müll. Arg.) R. Sant. = *Thelenella fugiens*

#### **ASPILIDEA** Hafellner (Hafellner & Türk 2001)

**myrinii** (Fr.) Hafellner

#### **ASTEROPHOMA** D. Hawksw.

\***mazaediicola** D. Hawksw.

#### **ASTEROTHYRIUM** Müll. Arg.

**decipiens** (Rehm) R. Sant.  
**leucophthalmum** (Müll. Arg.) R. Sant.  
**rotuliforme** (Müll. Arg.) Sérus. Syns.: *Gyalectidium rotuliforme*, *Lopadiopsis floridana*

#### **ASTROTHELIUM** Eschw.

**cinnamomeum** (Eschw.) Müll. Arg.  
**confusum** Müll. Arg.  
**diplocarpoides** Müll. Arg. (Lücking et al. 2011b)  
**diplocarpum** Nyl. (Harris 1995a)  
**galbineum** Kremp.  
**variolosum** (Ach.) Müll. Arg. Syn.: *Trypethelium catervarium*  
**versicolor** Müll. Arg.  
 conicum auct. = A. cinnamomeum



conicum Eschw. = (?) type not found  
ochrothelizum Müll. Arg. = A. galbineum

**ATHALLIA** Arup, Frödén & Söchting (Arup et al. 2013)

**cerinelloides** (Erichsen) Arup, Frödén & Söchting Syn.: Caloplaca cerinelloides  
**holocarpa** (Hoffm.) Arup, Frödén & Söchting Syn.: Caloplaca holocarpa  
**pyracea** (Ach.) Arup, Frödén & Söchting Syn.: Caloplaca pyracea  
**saxifragarum** (Poelt) Arup, Frödén & Söchting Syn.: Caloplaca saxifragarum  
**scopularis** (Nyl.) Arup, Frödén & Söchting Syn.: Caloplaca scopularis  
**vitellinula** (Nyl.) Arup, Frödén & Söchting Syn.: Caloplaca vitellinula

**ATHELIA** Pers.

\***arachnoidea** (Berk.) Jülich (Haffelner et al. 2002)  
+**epiphylla** Pers.  
**poeltii** Jülich

**ATLA** Savić & Tibell

**alaskana** S. Tibell & Tibell (Tibell & Tibell 2015)

**AULAXINA** Fée

**microphana** (Vainio) R. Sant.  
**quadrangula** (Stirton) R. Sant.

**BACHMANNIOMYCES** D. Hawksw.

\***uncialicola** (Zopf) D. Hawksw.

**BACIDIA** De Not.

**absistens** (Nyl.) Arnold  
**aggregatula** Malme  
**arceutina** (Ach.) Arnold  
[**Bilimbia artyta** (Ach.) Fink]  
**auerswaldii** (Hepp ex Stizenb.) Mig.  
**augustinii** (Tuck.) Zahlbr. = misplaced here, correct placement uncertain (Ekman 1996)  
**bagliettoana** (A. Massal. & De Not.) Jatta  
**biatorina** (Körber) Vainio  
**brouardii** (B. de Lesd.) Zahlbr.  
**campalea** (Tuck.) S. Ekman & Kalb  
**circumspecta** (Nyl. ex Vainio) Malme  
**coprodes** (Körber) Lettau (Llop & Ekman 2004) Syn.: Bilimbia trachona auct.  
**coruscans** S. Ekman (Ekman 2004a)  
**diffracta** S. Ekman  
**ekmaniana** R. C. Harris, Lendemer & Ladd (Lendemer et al. 2016b)  
**flavens** (Willey) Zahlbr. = a species of Lecania (Ekman 1996)  
**friesiana** (Hepp) Körber  
**granosa** (Tuck.) Zahlbr. Syn.: Bilimbia granosa, Bilimbia pammellii (Ekman 2014)  
**hegetschweileri** (Hepp) Vainio  
**helicospora** S. Ekman  
**herbarum** (Stizenb.) Arnold  
**heterochroa** (Müll. Arg.) Zahlbr.  
**hostheleoides** (Nyl.) Zahlbr. Syn.: Bilimbia accelinis  
**idahoensis** H. Magn. (McCune et al. 2014b)  
**igniarii** (Nyl.) Oxner  
**illudens** (Nyl.) Lynge  
**insularis** Zahlbr.  
**ioessa** Herre = misplaced here, correct placement uncertain (Ekman 1996)  
**jacobi** (Tuck.) Hasse = misplaced here, correct placement uncertain (Ekman 1996, 2004a)

**kekesiana** R. C. Harris (Harris 2009)  
**kingmanii** Hasse = misplaced here, correct placement uncertain (Ekman 1996)  
**laurocerasi** (Delise ex Duby) Zahlbr.  
**lobarica** Printzen & Tønsberg (Printzen & Tønsberg 2007)  
**medialis** (Tuck. ex Nyl.) B. de Lesd. (Ekman 1996) Syn.: *Biatora molybditis*, *Bilimbia molybditis*, *Lecidea medialis* (Ekman 1996)  
**mutabilis** Malme  
**\*peltigericola** Vainio (Weber & Wittman 2000)  
**phyllopsoropsis** R. C. Harris & Lendemer (Harris & Lendemer 2006)  
**polychroa** (Th. Fr.) Körber Syn.: *Biatora fuscorubella*  
**purpurans** R. C. Harris, Lendemer & Ladd (Lendemer et al. 2016b)  
**ravenelii** (Tuck.) Zahlbr. Syn.: *Bilimbia ravenelii* Correct placement uncertain (Ekman 1996)  
**reagens** Malme  
**rosellizans** S. Ekman (Ekman 2009)  
**rubella** (Hoffm.) A. Massal.  
**rubidofusca** (Willey) Zahlbr. Syn.: *Bilimbia rubidofusca* Possibly a species of *Gyalidea* (Printzen 1995)  
**russeola** (Kremp.) Zahlbr.  
**salmonea** S. Ekman  
**saxicola** Looman = misplaced, correct placement uncertain (Ekman 1996)  
**schweinitzii** (Fr. ex Tuck.) A. Schneider Syn.: *Biatora leucampyx* (Lendemer & Harris 2012)  
**scopulicola** (Nyl.) A. L. Sm.  
**sorediata** Lendemer & R. C. Harris (Lendemer et al. 2016b)  
**subgranulosa** (Tuck.) Riddle Erroneously listed as a synonym of *Phyllopsora canoumbrina* in the checklist; possibly belongs to *Psorella* (Ekman 1996)  
**subincompta** (Nyl.) Arnold  
**suffusa** (Fr.) A. Schneider Syn.: *Biatora suffusa*  
**veneta** S. Ekman (Ekman 2004a)  
**vermifera** (Nyl.) Th. Fr. (Ekman 1996)  
**viridifarinosa** Coppins & P. James (Tønsberg 1997)  
abbrevians (Nyl.) Th. Fr. = *B. igniarii*  
abductans (Nyl.) Zahlbr. = *B. schweinitzii*  
accedens (Arnold) Lettau = *Bilimbia accedens*  
accedens sensu Harris = unnamed species (Ekman 1996)  
acclinis (Flotow) Zahlbr. = *Arthrosporum populorum*  
affinis (Stizenb.) Vainio = *B. subincompta*  
akompsa (Tuck.) Fink = a *Lecanactis* sp.  
alaskensis (Nyl.) Zahlbr. = *Herteliana alaskensis*  
albescens (Kremp.) Zwackh = *Bacidina phacodes*, but a misidentification for N.A. (Ekman 1996)  
alpina (Schaerer) Vainio = *Arthrorhaphis alpina*  
apiahica (Müll. Arg.) Zahlbr. = *Bacidina apiahica*  
arnoldiana Körber = *Bacidina arnoldiana*  
arthoniza (Nyl.) Zahlbr. = *Lecidella stigmatea*  
assulata (Körber) Vězda = *Bacidina assulata*  
atrogrisea (Delise ex Hepp) Körber = *B. laurocerasi*  
aurantiaca Vězda = *Fellhanera aurantiaca*  
bacillifera (Nyl.) Arnold = *B. circumspecta*  
beckhausii Körber = *Biatora beckhausii* (Printzen 2014)  
caloosensis (Tuck.) Zahlbr. = *B. hostheleoides*  
carneoalbida (Müll. Arg.) Coppins = *Mycobilimbia carneoalbida*  
chlorantha (Tuck.) Fink = *Ropalospora chlorantha*  
chlorococca (Stenh.) Lettau = *Scoliciosporum chlorococcum*  
chlorosticta (Tuck.) A. Schneider = *Micarea chlorosticta*  
citrinella (Ach.) Branth & Rostrup = *Arthrorhaphis citrinella*  
clementis Hasse = *Bactrospora patellarioides* (Ekman 1996)  
cuprea (A. Massal.) Lettau = *Lecania cuprea* (Ekman 1996)



cupreorosella (Nyl.) A. Schneider = *Lecania cuprea*  
 declinis (Tuck.) Zahlbr. = *Catillaria nigroclavata*  
 dryina (Ach.) Fink = *Bactrospora dryina*  
 effusa auct. = *B. assulata*  
 egenula (Nyl.) Arnold = *Bacidina egenula*  
 egenuloidea Fink = *Bacidina egenuloidea*  
 endocyanea (Tuck. ex Willey) Zahlbr. = *Micarea endocyanea*  
 endoleuca auct. = *B. laurocerasi*  
 epixanthoides (Nyl.) Lettau = *Mycobilimbia epixanthoides*  
 flavovirescens (Dickson) Anzi = *Arthrorhaphis citrinella*  
 floridana (Tuck.) Zahlbr. = *Fellhanera floridana*  
 fusca (A. Massal.) Du Rietz = *Mycobilimbia tetramera*  
 fuscorubella (Hoffm.) Bausch = *B. polychroa*  
 fuscorubella var. suffusa (Fr.) Fink = *B. suffusa*  
 globulosa (Flörke) Hafellner & V. Wirth = *Biatora globulosa*  
 gyalectiformis (Zahlbr.) Hasse = *Ramonia gyalectiformis*  
 gyalizella (Nyl.) Zahlbr. = *Gyalecta gyalizella* (Baloch et al. 2013a)  
 hegetschweileri auct. = *B. vermifera* (Ekman 1996)  
 hegetschweileri (Hepp) Vainio = *B. subincompta* (Nyl.) Arnold (Ekman 1996)  
 hemipolia (Nyl.) Malme (Weber & Wittman 2000, Czarnota & Coppins 2007) = *Biatora hemipolia* (Printzen 2014)  
 herrei Zahlbr. = *Ophioparma rubricosa*  
 hypnophila (Turner ex Ach.) Zahlbr. = *Bilimbia sabuletorum*  
 incompta (Borrer ex Hooker) Anzi = misidentification for North America  
 intermedia (Hepp ex Stizenb.) Arnold = *Bacidina assulata* (Ekman 1996)  
 inundata (Fr.) Körber = *Bacidina inundata*  
 laurocerasi subsp. idahoensis (H. Magn.) S. Ekman = *B. idahoensis* (McCune et al. 2014b)  
 leucophyllina (Nyl.) Fink = misidentification for North America  
 lignaria (Ach.) Lettau = *Micarea lignaria*  
 lugubris (Sommerf.) Zahlbr. = *Ropalospora lugubris*  
 luteola "(Ach.) Mudd" = *B. rubella*  
 meadii (Tuck. ex Willey) Zahlbr. = *Byssoloma meadii*  
 melaena (Nyl.) Zahlbr. = *Micarea melaena*  
 microcarpa (Th. Fr.) Lettau = *Bilimbia microcarpa*  
 microphyllina auct. = *Phyllopsora santensis*  
 microphyllina (Tuck.) Riddle = misidentification for North America  
 minuscula Anzi = *B. beckhausii*  
 molybditis (Tuck.) Zahlbr. = *B. medialis*  
 muscorum (Sw.) Mudd = *B. bagliettoana*  
 naegelii (Hepp) Zahlbr. = *Lecania naegelii*  
 nivalis Follmann = *Stereocaulon nivale*  
 obscurata (Sommerf.) Zahlbr. = *Mycobilimbia tetramera*  
 pallens (Kullhem) Zahlbr. = *Biatora pallens* (Printzen & Otte 2005)  
 pammellii (Fink) Zahlbr. = *Bacidia granosa* (Ekman 2014)  
 phacodes auct. N. Am. = *Bacidina californica*, in part  
 populorum (A. Massal.) Trevisan = *Arthrosporum populorum*  
 rosella (Pers.) De Not. = *B. rosellizans* for North American reports  
 rubricosa (Müll. Arg.) Zahlbr. = *Ophioparma rubricosa*  
 sabuletorum (Schreber) Lettau = *Bilimbia sabuletorum*  
 sibiriensis (Willey ex Rothr.) Zahlbr. = *Lecania subfuscula* (Ekman 1996)  
 sphaeroides (Dickson) Zahlbr. = *Mycobilimbia pilularis*  
 sphaeroides auct. non (Dickson) Zahlbr. = *Mycobilimbia carneoalbida*  
 stigmatella (Tuck.) Zahlbr. = *Lecania stigmatella*  
 subfuscula (Nyl.) Th. Fr. = *Lecania subfuscula*  
 tetramera (De Not.) Coppins = *Mycobilimbia tetramera*  
 trachona (Ach.) Lettau North American reports are *B. coprodes* (Llop & Ekman 2004)

trisepta (Hellbom) Zahlbr. = *Micarea peliocarpa*  
umbrina (Ach.) Bausch = *Scoliciosporum umbrinum*  
verecundula (Th. Fr.) = misidentification for North America (Ekman 1996)

#### **BACIDINA** Vězda

**aenea** S. Ekman  
**apiahica** (Müll. Arg.) Vězda Syn.: *Bacidia apiahica*  
**arnoldiana** (Körber) V. Wirth & Vězda Syn.: *Bacidia arnoldiana*  
**assulata** (Körber) S. Ekman Syn.: *Bacidia assulata*, *B. effusa*, *B. intermedia*  
**brittoniana** (Riddle) LaGreca & S. Ekman (Berger & LaGreca 2014)  
**californica** S. Ekman Syn.: *Bacidia phacodes* auct. N.A., *B. albescens* auct. N.A.?  
**chlorotricula** (Nyl.) Vězda & Poelt (Ekman 1996)  
**contecta** S. Ekman & T. Sprib. (Spribille et al. 2009)  
**crystallifera** S. Ekman  
**delicata** (Leighton) V. Wirth & Vězda (Harris & Lendemer 2005)  
**egenula** (Nyl.) Vězda Syn.: *Bacidia egenula*  
**egenuloidea** (Fink) S. Ekman Syn.: *Bacidia egenuloidea*  
**inundata** (Fr.) Vězda Syn.: *Bacidia inundata*  
**neosquamulosa** (Aptroot & van Herk) S. Ekman (Ekman 2004b)5  
**pallidocarnea** (Müll. Arg.) Vězda (Seavey & Seavey 2012)  
**phacodes** (Körber) Vězda (Harris & Ladd 2005)  
**ramea** S. Ekman  
**squamellosa** S. Ekman  
phacodes (Körber) Vězda = *Bacidina californica*, in part, for N.A. records  
varia S. Ekman = *B. brittoniana*

#### **BACIDIOPSORA** Kalb

**squamulosula** (Nyl.) Kalb (Seavey et al. 2014)

#### **BACTROSPORA** A. Massal.

**acicularis** (C. W. Dodge) Egea & Torrente (Egea et al. 2004a)  
**brevispora** R.C. Harris  
**brodoi** Egea & Torrente  
**carolinensis** (Ellis & Everh.) R. C. Harris (Knudsen et al. 2011b)  
**cascadensis** Ponzetti & McCune (Ponzetti & McCune 2006)  
**denticulata** (Vainio) Egea & Torrente  
**dryina** (Ach.) A. Massal. Syn.: *Bacidia dryina*  
**lamprospora** (Nyl.) Lendemer Syn.: *Gyalecta lamprospora*, *Melampylidium macrosporum* (Lendemer 2004a)  
**myriadea** (Fée) Egea & Torrente  
**patellarioides** (Nyl.) Almq. Syn.: *Lecanactis patellarioides*, *Bacidia clementis*  
**spiralis** Egea & Torrente  
integrifera Seaver = *B. denticulata* (Harris 1995a)  
macrospora R.C. Harris = *B. lamprospora*  
mesospora R.C. Harris = *B. carolinensis*  
nematospora R.C. Harris = *B. myriadea*

#### **BACULIFERA** Marbach & Kalb

**curtisii** (Tuck.) Marbach Syn.: *Buellia curtisii* (Marbach 2000), *Gyrostomum curtisii*  
**imshaugiana** (R. C. Harris) Marbach Syn.: *Buellia imshaugiana* (Marbach 2000)

#### **BAEOMYCES** Pers.

**carneus** Flörke  
**placophyllus** Ach.  
**rufus** (Hudson) Rebert.  
absolutus Tuck. = *Dibaeis absoluta*



aeruginosa (Scop.) DC. = Icmadophila ericetorum  
byssoides (L.) Ach. (Claassen 1912) = B. rufus  
fungoides (Sw.) Ach. North American reports are Dibaeis baeomyces  
roseus Pers. = Dibaeis baeomyces

**BAGLIETTOA** A. Massal.

**baldensis** (A. Massal.) Vězda (Breuss 2007a) Syn.: Verrucaria baldensis  
**calciseda** (DC.) Gueidan & Cl. Roux Syn.: Verrucaria calciseda (Knudsen & Kocourková 2009b)  
**marmorea** (Scop.) Gueidan & Cl. Roux Syn.: Verrucaria marmorea (Yuzon et al. 2014)  
**rubrocincta** (Breuss) Gueidan & Cl. Roux (Yuzon et al. 2014) Syn.: Verrucaria rubrocincta

**BATHELIUM** Ach. (Harris 1995a)

**carolinianum** (Tuck.) R. C. Harris (Harris 1995a) Syn.: Trypethelium carolinianum  
**madreporiforme** (Eschw.) Trevisan (Harris 1995a) Syn.: Laurera madreporiformis

**BELLEMERE** Hafellner & Cl. Roux

**alpina** (Sommerf.) Clauzade & Cl. Roux Syns.: Lecanora alpina, L. applegatei, Aspicilia alpina  
**cinereorufescens** (Ach.) Clauzade & Cl. Roux Syns.: Aspicilia cinereorufescens, Lecanora cinereorufescens  
**diamarta** (Ach.) Hafellner & Cl. Roux Syn.: Aspicilia diamarta  
**sanguinea** (Kremp.) Hafellner & Cl. Roux Syns.: Aspicilia sanguinea, Lecanora sanguinea  
**subsolediza** (Lynge) R. Sant. Syns.: Lecidea subsolediza, Aspicilia subsolediza

**BELLEMERELLA** Nav.-Ros. & Cl. Roux

\***ritae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2007)

**BELONIA** Körber ex Nyl. = **GYALECTA** (Baloch et al. 2013a)

**americana** Fink ex Hedr. = Robergea pupula, but excluded as a non-lichen  
**fennica** Vainio = Gyalecta russula  
**russula** Körber ex Nyl. = Gyalecta russula

**BIATORA** Fr.

**aegrefaciens** Printzen (Printzen et al. 2002)  
**alaskana** Printzen & Tønsberg (Printzen & Tønsberg 1999)  
**appalachensis** Printzen & Tønsberg (Printzen & Tønsberg 2004)  
**aureolepra** T. Sprib. & Tønsberg (Spribille et al. 2009)  
**beckhausii** (Körber) Tuck. Syn.: Bacidia beckhausii (Printzen 2014)  
**caulophylla** Tuck. Possibly belongs to Lecanora (Ryan & Nash 1997a)  
**chrysantha** (Zahlbr.) Printzen in V. Wirth (Printzen 1995)  
**chrysanthoides** Printzen & Tønsberg (Printzen & Tønsberg 2003)  
**cuprea** (Sommerf.) Fr. Syn.: Lecidea cuprea  
**efflorescens** (Hedl.) Räsänen (Printzen 1995) Syns.: Lecidea efflorescens, L. epixanthoidiza  
**ementiens** (Nyl.) Printzen Syn.: Lecidea ementiens (Printzen 2014)  
**fallax** Hepp (Printzen & Tønsberg 1999)  
**flavopunctata** (Tønsberg) Hinter. & Printzen Syn.: Lecanora flavopunctata  
**globulosa** (Flörke) Fr. Syns.: Bacidia globulosa, Catillaria globulosa, Lecidea globulosa, L. sylvana (Printzen 2004)  
**helvola** Körber ex Hellbom (Spribille et al. 2010) Syn.: Lecidea helvola  
**hemipolia** (Nyl.) S. Ekman & Printzen Syn.: Bacidia hemipolia (Printzen 2014)  
**hypophaea** Printzen & Tønsberg (Printzen & Tønsberg 1999)  
**kodiakensis** Printzen & Tønsberg (Printzen & Tønsberg 2004)  
**ligni-mollis** T. Sprib. & Printzen (Spribille et al. 2009)  
**longispora** (Degel.) Lendemer & Printzen Syn.: Lecidea helvola var. longispora (Lendemer 2004b)  
**meiocarpa** (Nyl.) Arnold Syn.: Lecidea meiocarpa, L. minuta  
**meiocarpa** var. **tacomensis** (Printzen & Tønsberg) Printzen & Tønsberg (Printzen & Tønsberg 2004)  
Syn.: Lecidea meiocarpa var. tacomensis

**nobilis** Printzen & Tønsberg (Printzen & Tønsberg 1999)  
**ocelliformis** (Nyl.) Arnold (Printzen & Otte 2005)  
**oligocarpa** Printzen & Tønsberg (Printzen & Tønsberg 2004)  
**pallens** (Kullhem) Printzen (Printzen & Otte 2005) Syns.: *Cliostomum pallens*, *Bacidia pallens*  
**pausiaca** Printzen & Tønsberg (Printzen & Tønsberg 2003)  
**pontica** Printzen & Tønsberg (Printzen & Tønsberg 2003)  
**printzenii** Tønsberg (Tønsberg 2002)  
**pycnidiata** Printzen & Tønsberg (Printzen & Tønsberg 2004)  
**rufidula** (Graewe) S. Ekman & Printzen (Printzen & Tønsberg 1999)  
**sphaeroidiza** (Vainio) Printzen & Holien (Dillman et al. 2012)  
**subduplex** (Nyl.) Printzen (Printzen 1995) Syns.: *Lecidea subduplex*, *L. apochroeiza*, *L. internectens*  
**toensbergii** Holien & Printzen (Printzen & Tønsberg 1999)  
**vacciniicola** (Tønsberg) Printzen (Printzen 1995) Syn.: *Lecidea vacciniicola*  
**vernalis** (L.) Fr. Syn.: *Lecidea vernalis*  
*atropurpurea* (Schaerer) Hepp = *Catinaria atropurpurea*  
*albohyalina* (Nyl.) Bagl. & Carestia = *Lecidea albohyalina* (Printzen & Tønsberg 1999)  
*amaurospoda* Anzi = *Lecidea pullata*  
*anthracophila* (Nyl.) Hafellner = *Carbonicola anthracophila*  
*botryosa* Fr. (Printzen 1995) = *Hertelidea botryosa*  
*carneoalbida* (Müll. Arg.) Coppins = *Mycobilimbia carneoalbida*  
*cladoniscum* Willey (see note under *Nesolechia cladoniscum*)  
*cyrtella* (Ach.) W. Mann = *Lecania cyrtella*  
*decipiens* (Ehrh.) Fr. = *Psora decipiens*  
*epixanthoides* (Nyl.) Diederich = *Mycobilimbia epixanthoides*  
*floridana* Tuck. = *Fellhanera floridana*  
*franciscana* Tuck. = *Lecania franciscana*  
*friesii* (Ach.) Tuck. = *Xylopsora friesii*  
*furvonigrans* Tuck. ex Willey = *Lecidea furvonigrans*  
*fuscorubella* (Hoffm.) Tuck. = *Bacidia polychroa*  
*hypomela* “Nyl.” (Mohr 1901) = *Lecidea hypomela*?  
*meadii* Tuck. ex Willey = *Byssoloma meadii*  
*molybdis* Tuck. = *Bacidia medialis*  
*myriocarpella* G. Merr. = *Lecidea enalla* (Printzen 1995)  
*paddensis* Tuck. = *Lecanora paddensis* (McCune et al. 2014b)  
*papillariae* Willey (see note under *Nesolechia cladoniscum*)  
*parvifolia* (Pers.) Tuck. = *Phyllopsora parvifolia*  
*petri* Tuck. = *Romjularia lurida*  
*porphyrospoda* Anzi = *Myochroidea porphyrospoda*  
*pullata* Norman = *Frutidella pullata*  
*pullula* Tuck. = *Lecanora anopta*  
*rufofusca* Anzi = *Myochroidea rufofusca*  
*rufonigra* Tuck. = *Psorula rufonigra*  
*russula* (Ach.) Mont. = *Ramboldia russula*  
*russellii* Tuck. = *Psora russellii*  
*scrupulosa* Eckfeldt = *Fuscidea scrupulosa*  
*sibiriensis* Willey ex Rothr. = *Lecania subfuscula* (Ekman 1996, Dillman et al. 2012)  
*sphaeroides* (Dickson) Körber = *Mycobilimbia pilularis*  
*suffusa* Fr. = *Bacidia suffusa*  
*turgidula* (Fr.) Nyl. = *Lecidea turgidula*  
*varians* (Ach.) Eschw. = *Lecidea varians*  
*viridescens* (Schrader) W. Mann = *Trapeliopsis viridescens*

#### **BIATORELLA** De Not.

**camptocarpa** (Tuck.) Fink (Tuckerman 1888, Fink 1935, Esslinger & Tucker 2009)  
**conspurcans** Norman (Dillman et al. 2012)  
**contigua** N. S. Golubk. & Piin (Zhurbenko et al. 2005)



**cyphalea** (Tuck.) Zahlbr.  
**floridensis** H. Magn.  
**hemisphaerica** Anzi  
 albidula (Willey) Zahlbr. = Myrionora albidula  
 campestris (Fr.) Almq. = Sarcosagium campestre  
 clauzadeana Llimona & Vězda = Acarospora clauzadeana  
 clavus (DC.) Th. Fr. = Sarcogyne clavus  
 conspersa (Fée) Vainio = Piccolia conspersa  
 fossarum (Dufour ex Fr.) Th. Fr. = B. hemisphaerica for North American records  
 geophana (Nyl.) Rehm (Fink 1935) = Steinia geophana  
 hypophaea (Nyl.) Blomb. & Forssell = Sarcogyne hypophaea  
 kulshanensis Herre = Sporastatia testudinea (Ketzner 2010)  
 leucampyx Tuck. = Bacidia schweinitzii (Lendemer & Harris 2012)  
 microhaema Norman = Strangospora microhaema  
 moriformis (Ach.) Th. Fr. = Strangospora moriformis  
 nannaria (Tuck.) Zahlbr. (Fink 1935) = Piccolia nannaria  
 ochrophora (Nyl.) Arnold = Piccolia ochrophora  
 plicata (H. Magn.) Zahlbr. = Sarcogyne plicata (Knudsen & Lendemer 2005a)  
 pruinosa "(Körber) Mudd" = Sarcogyne regularis  
 rappii Zahlbr. = Ramonia microspora (Lendemer & Knudsen 2011)  
<sup>+</sup>resinae (Fr.) Th. Fr. = Sarea resinae  
 revertens (Tuck.) Herre (Tuckerman 1882, Fink 1935) = Polysporina simplex (Tucker & Jordan 1979)  
 simplex (Taylor) Branth & Rostrup = Polysporina simplex  
 terrena Hasse = Sarcogyne crustacea (Knudsen & Kocourková 2010a)  
 testudinea (Ach.) A. Massal. = Sporastatia testudinea

#### **BIATORIDIUM** J. Lahm

**delitescens** (Arnold) Hafellner (Ekman 1996)  
**monasteriense** J. Lahm ex Körber (McCune & Rosentreter 2014)

#### **BIATOROPSIS** Räsänen

**\*usnearum** Räsänen

#### **BILIMBIA** De Not.

**accedens** Arnold Syns.: Mycobilimbria accedens, Myxobilimbria accedens (Spribille et al. 2010)  
**lobulata** (Sommerf.) Hafellner & Coppins Syns.: Mycobiolimbria lobulate, Toninia lobulata (Veldkamp 2004)  
**microcarpa** (Th. Fr.) Th. Fr. Syns.: Bacidia microcarpa, Mycobilimbria microcarpa (Veldkamp 2004)  
**sabuletorum** (Schreber) Arnold Syns.: Bacidia sabuletorum, B. hypnophila, Mycobilimbria sabuletorum, Myxobilimbria sabuletorum (Veldkamp 2004)  
 acclinis (A. Massal.) Trevisan (Fink 1935) = Arthrosporum populorum (Ekman 1996)  
 caloosensis (Tuck.) Fink (Fink 1935) = Bacidia hostheleoides (Ekman 1996)  
 caudata (Nyl.) Fink = Ropalospora lugubris  
 cupreorosella (Nyl.) Bausch (Fink 1935) = Lecania cuprea (Ekman 1996)  
 declinis (Tuck.) Fink (Fink 1935) = Catillaria nigroclavata (Ekman 1996)  
 floridana (Tuck.) Riddle (Fink 1935) = Fellhanera floridana (Ekman 1996)  
 granosa (Tuck.) Fink (Fink 1935) = Bacidia granosa (Ekman 2014)  
 gyalectiformis Zahlbr. = Ramonia gyalectiformis  
 gyalizella (Nyl.) Fink (Fink 1935) = Gyalecta gyalizella (Baloch et al. 2013a)  
 lignaria (Ach.) A. Massal. (Fink 1935) = Micarea lignaria  
 meadii (Tuck.) Fink (Fink 1935) = Byssoloma meadii (Tuck. ex Willey) S. Ekman (Ekman 1996)  
 melaena (Nyl.) Arnold (Fink 1935) = Micarea melaena  
 molybdis (Tuck.) Fink (Fink 1935) = Bacidia medialis (Ekman 1996)  
 naegelii (Hepp) Kremp. (Fink 1935) = Lecania naegelii  
 pammellii Fink (Fink 1935) = Bacidia granosa (Ekman 2014)  
 ravenelii (Tuck.) Fink (Fink 1935) = Bacidia ravenelii (Ekman 1996)

rubidofusca (Willey) Fink (Fink 1935) = *Bacidia rubidofusca* (Ekman 1996)  
 rubricosa (Müll. Arg.) Fink (Fink 1935) = *Ophioparma rubricosa* (Ekman 1996)  
 sphaeroides (Dickson) Körber (Fink 1935) = *Mycobilimbia pilularis* (Ekman 1996)  
 sphaeroides auct. = *Mycobilimbia carneoalbida* (Ekman 1996)  
 trachona (Ach.) Trevisan (Fink 1935) North American reports are *Bacidia coprodes* (Llop & Ekman 2004)  
 trisepta (Nägeli) Arnold = *Micarea peliocarpa* (Santesson et al. 2004)  
 tricholoma (Mont.) Fink = *Byssoloma tricholomum*

#### BISPORA Fuckel

\*christiansenii D. Hawksw. (Alstrup & Cole 1998) = *Intralichen christiansenii*  
 \*lichenum Diederich (Cole & Hawksworth 2001) = *Intralichen lichenum*

#### BLASTENIA A. Massal. (Arup et al. 2013)

**ammiospila** (Wahlenb.) Arup, Søchting & Frödén Syns. *Caloplaca ammiospila*, *C. cinnamomea*, *C. discoidalis*  
**ferruginea** (Hudson) Th. Fr. Syn.: *Caloplaca ferruginea*, *Placodium ferrugineum*  
**furfuracea** (H. Magn.) Arup, Søchting & Frödén Syn.: *Caloplaca furfuracea*  
*atrosanguinea* (G. Merr.) Fink (Fink 1935) = *Caloplaca atrosanguinea*  
*crenularia* (With.) Arup, Søchting & Frödén = misidentification for North America (Wetmore 1996)  
*diphasia* (Tuck.) Zahlbr. = *Caloplaca diphasia*  
*festiva* (Ach.) A. Massal. = *Caloplaca crenularia*, but North American records incorrect according to Wetmore (1996)  
*floridana* (Tuck.) Zahlbr. = *Caloplaca floridana*  
*fraudans* (Th. Fr.) B. de Lesd. = *Caloplaca fraudans*  
*luteominia* (Tuck.) Hasse = *Polycauliona luteominea*  
*novomexicana* Fink = a *Caloplaca* sp.?  
*rubrofusca* B. de Lesd. = a *Caloplaca* sp.?  
*sinapisperma* (DC.) A. Massal. = *Bryoplaca sinapisperma*

#### BLENNOTHALLIA Trevisan (Otálora et al. 2014)

**crispa** (Hudson) Otálora, P. M. Jørg. & Wedin Syn.: *Collema cheilum*, *C. crispum*  
**fecunda** (Degel.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema fecundum*

#### BOMBYLIOSPORA De Not. ex A. Massal. = MEGALOSPORA

*domingensis* (Pers.) Zahlbr. = *Letrouitia domingensis*  
*pachycheila* (Tuck.) Zahlbr. = *Megalospora pachycheila*  
*porphyritis* (Tuck.) A. Massal. = *Megalospora porphyritis*  
*tuberculosa* (Fée) De Not. = *Megalospora tuberculosa*  
*vulpina* (Nyl.) J. M. Burgess = nom. inval. = *Letrouitia vulpina*

#### BOTRYDINA Bréb. = LICHENOMPHALIA

*botryoides* (L.) Redhead & Kuyper = *Lichenomphalia umbellifera*  
*luteovitellina* (Pilát & Nannf.) Redhead & Kuyper = *Lichenomphalia alpina*  
*velutina* (Quélet) Redhead & Kuyper = *Lichenomphalia velutina*  
*viridis* (Ach.) Redhead & Kuyper = *Lichenomphalia hudsoniana*  
*vulgaris* Bréb. sens. str. = *Lichenomphalia umbellifera*

#### BOTRYOLEPRARIA Canals, Hernández-Mariné, Gómez-Bolea & Llimona

**lesdainii** (Hue) Canals, Hernández-Mariné, Gómez-Bolea & Llimona Syn.: *Lepraria lesdainii* (Canals et al. 1997)

#### BOTTARIA A. Massal. = MYCOPORUM Flotow ex Nyl.

*cruentata* Müll. Arg. = *Pyrenula cruentata*



**BRIANARIA** S. Ekman & M. Svensson (Ekman & Svensson 2014)

**bauschiana** (Körber) S. Ekman & M. Svensson Syns.: *Lecidea dilutiuscula*, *L. lynceola* auct. N. Am., *Micarea bauschiana*

**lutulata** (Nyl.) S. Ekman & M. Svensson Syns.: *Lecidea lutulata*, *Micarea lutulata*

**sylvicola** (Flotow ex Körber) S. Ekman & M. Svensson Syns.: *Lecidea sylvicola*, *Micarea sylvicola*

**tuberculata** (Sommerf.) S. Ekman & M. Svensson Syn.: *Micarea tuberculata*

**BRIANCOPPINSIA** Diederich, Ertz, Lawrey & van den Boom (Diederich et al. 2012)

\***cytophora** (Vouaux) Diederich, Ertz, Lawrey & van den Boom (Diederich et al. 2012, Kocourková et al. 2012) Syn.: *Phoma cytophora*

**BRIGANTIAEA** Trevisan

**fuscolutea** (Dickson) R. Sant. Syn.: *Lopadium fuscoluteum*

**leucoxantha** (Sprengel) R. Sant. & Hafellner Syn.: *Lopadium leucoxanthum*, *Heterothecium leucoxanthum*

**praetermissa** Hafellner & St. Clair (Hafellner 1997)

**purpurata** (Zahlbr.) Hafellner & Bellem. (Goward et al. 1996) = *B. praetermissa* (Hafellner 1997)

**BRODOA** Goward

**oroarctica** (Krog) Goward Syn.: *Hypogymnia oroarctica*.

**atrofusca** (Schaerer) Goward Syns.: *Hypogymnia atrofusca*, *Parmelia atrofusca*. North American reports are probably misidentifications of *Brodoa oroarctica*

**intestiniformis** (Vill.) Goward Syns.: *Hypogymnia intestiniformis*, *H. encausta*, *Parmelia*

**intestiniformis**, *P. encausta*. North American reports are misidentifications of *Brodoa oroarctica*

**BRUCEA** Rikkinen (Rikkinen 2003b) = **BRUCEOMYCES** Rikkinen (Tuovila et al. 2012)

+**castoris** Rikkinen = *Bruceomyces castoris*

**BRUCEOMYCES** Rikkinen (Tuovila et al. 2012)

+**castoris** Rikkinen

**BRYOBILIMBIA** Fryday, Printzen & S. Ekman (Fryday et al. 2014)

**ahlesii** (Körber) Fryday, Printzen & S. Ekman Syns.: *Lecidea ahlesii*, *L. delincta*

**ahlesii** var. **nemoralis** (J. Lowe) Fryday, Printzen & S. Ekman Syns.: *Lecidea ahlesii* var. *nemoralis*, *L. nemoralis*

**diapensiae** (Th. Fr.) Fryday, Printzen & S. Ekman Syn.: *Lecidea diapensiae*

**hypnorum** (Lib.) Fryday, Printzen & S. Ekman Syns.: *Lecidea hypnorum*, *L. fusca*, *L. templetonii*, *L. atrofusca*, *L. sanguineoatra* sens. Nyl., *Mycobilimbium hypnorum*

**BRYOCAULON** Kärnefelt

**divergens** (Ach.) Kärnefelt Syns.: *Alectoria divergens*, *Cornicularia divergens*, *Coelocaulon divergens*

**pseudosatoanum** (Asahina) Kärnefelt Syn.: *Cornicularia pseudosatoana*

**BRYODINA** Hafellner

**rhypariza** (Nyl.) Hafellner & Türk (Zhurbenko 2013)

**BRYONORA** Poelt

**castanea** (Hepp) Poelt Syn.: *Lecanora castanea*

**curvescens** (Mudd) Poelt Syn.: *Lecania curvescens*

**pruinosa** (Th. Fr.) Holtan-Hartwig

**septentrionalis** Holtan-Hartwig

**BRYOPHAGUS** Nitschke ex Arnold

**gloeocapsa** Nitschke ex Arnold (fide J. Hafellner, see Appendix) = [Cryptodiscus gloeocapsa](#)

**BRYOPLACA** Søchting, Frödén & Arup (Arup et al. 2013)

**jungermanniae** (Vahl) Søchting, Frödén & Arup Syn.: Caloplaca jungermanniae

**sinapisperma** (Lam. & DC.) Søchting, Frödén & Arup Syns.: Blastenia sinapisperma, Caloplaca leucoraea, C. sinapisperma

**tetraspora** (Nyl.) Søchting, Frödén & Arup Syn.: Caloplaca tetraspora

**BRYOPOGON** Link

negativus Gyelnik = Bryoria fuscescens

pacificus Gyelnik = Bryoria fuscescens

**BRYORIA** Brodo & D. Hawksw.

**alaskana** Myllys & Goward (Myllys et al. 2016)

**ambigua** (Motyka) Bystr. & Fabiszewski Syn.: Alectoria ambigua (Bystrek & Fabiszewski 1998)

**americana** (Motyka) Holien Syn.: Alectoria americana (Holien 1994, Myllys et al. 2011)

**bicolor** (Ehrh.) Brodo & D. Hawksw. Syn.: Alectoria bicolor

**carlottae** Brodo & D. Hawksw.

**cervinula** Motyka ex Brodo & D. Hawksw. Syn.: Alectoria cervinula

**fabiszewskiana** Bystr. (Bystrek & Fabiszewski 1998)

**fremontii** (Tuck.) Brodo & D. Hawksw. Syns.: Alectoria fremontii, A. corneliae, A. tenerrima, A. tortuosa

**friabilis** Brodo & D. Hawksw. (Velmala et al. 2014)

**furcellata** (Fr.) Brodo & D. Hawksw. Syns.: Alectoria nidulifera, Cornicularia fibrillosa

**furcellata** subsp. **hawksworthiana** Bystr. & Fabiszewski (Bystrek & Fabiszewski 1998)

**fuscescens** (Gyelnik) Brodo & D. Hawksw. Syns.: Alectoria fuscescens, A. positiva, Bryopogon pacificus

**glabra** (Motyka) Brodo & D. Hawksw. Syn.: Alectoria glabra

**inactiva** Goward, Velmala & Myllys (Velmala et al. 2014)

**irwinii** Goward & Myllys (Myllys et al. 2016)

**kockiana** Velmala, Myllys & Goward (Velmala et al. 2014)

**nadvornikiana** (Gyelnik) Brodo & D. Hawksw. Syns.: Alectoria nadvornikiana, A. altaica

**nitidula** (Th. Fr.) Brodo & D. Hawksw. Syns.: Alectoria nitidula, A. irvingii, A. lanea auct.

**pikei** Brodo & D. Hawksw. Syns.: Alectoria cana, North American reports of A. capillaris & A. setacea

**pseudofuscescens** (Gyelnik) Brodo & D. Hawksw. Syns.: Alectoria achariana, A. norstictica nom. inval., A. subtilis nom. inval. (Velmala et al. 2014)

**salazinica** Brodo & D. Hawksw.

**simplicior** (Vainio) Brodo & D. Hawksw. Syns.: Alectoria simplicior, A. nana nom. nudum

**tenuis** (E. Dahl) Brodo & D. Hawksw. Syn.: Alectoria tenuis

**trichodes** (Michaux) Brodo & D. Hawksw. subsp. **trichodes** Syns.: Alectoria canadensis, A. delicata nom. nudum

**trichodes** subsp. **brodoana** Bystr. & Fabiszewski (Bystrek & Fabiszewski 1998)

**trichodes** subsp. **canadensis** (Motyka) Bystr. & Fabiszewski (Bystrek & Fabiszewski 1998)

**vrangiana** (Gyelnik) Brodo & D. Hawksw. (Velmala et al. 2014)

abbreviata (Müll. Arg.) Brodo & D. Hawksw. = Nodobryoria abbreviata

capillaris (Ach.) Brodo & D. Hawksw. A European species; North American records are B. pikei (Velmala et al. 2014)

chalybeiformis (L.) Brodo & D. Hawksw. = B. fuscescens (Velmala et al. 2014)

implexa (Hoffm.) Brodo & D. Hawksw. A European species; North American records are B. kockiana

lanestris (Ach.) Brodo & D. Hawksw. = B. fuscescens (Velmala et al. 2014)

oregana (Tuck. ex Willey) Brodo & D. Hawksw. = Nodobryoria oregana

pseudocapillaris Brodo & D. Hawksw. = Sulcaria spiralifera (Myllys et al. 2014)

setacea (Ach.) Brodo & D. Hawksw. Not in North America.

spiralifera Brodo & D. Hawksw. = Sulcaria spiralifera (Myllys et al. 2014)

subcana (Nyl. ex Stizenb.) Brodo & D. Hawksw. = B. fuscescens (Velmala et al. 2014)

subdivergens (E. Dahl) Brodo & D. Hawksw. = Nodobryoria subdivergens

tortuosa (G. Merr.) Brodo & D. Hawksw. = B. fremontii (Velmala et al. 2009)

**trichodes** subsp. **americana** (Motyka) Brodo & D. Hawksw. = B. americana (Myllys et al. 2011)



## **BRYOSCYPHUS** Spooner

\***lichenicola** Alstrup & M. S. Cole (Alstrup & Cole 1998)

## **BRYOSTIGMA** Poelt & Döbbeler

**muscigenum** (Th. Fr.) Frisch & G. Thor Syn.: *Arthonia muscigena*, *A. leucodontis* (Frisch et al. 2014)  
*leucodontis* Poelt & Döbbeler = *Bryostigma muscigenum*

## **BUELLIA** De Not.

**abstracta** (Nyl.) H. Olivier (Giralt et al. 2011, Knudsen & Kocourková 2010c)

**aethalea** (Ach.) Th. Fr.

**arborea** Coppins & Tønsberg (Tønsberg & McCune 2001)

**arnoldii** Servít Syn.: *Hafellia arnoldii*

#**badia** (Fr.) A. Massal. Syn.: *Amandinea turgescens*

**bahiana** Malme Syn.: *Hafellia bahiana*

**bahiana** var. **pleiotropa** Malme

**bolacina** Tuck.

**calcariaecola** B. de Lesd.

**callispora** (C. Knight) J. Steiner Syn.: *Hafellia callispora*

**capitis-regum** W. A. Weber

**cedricola** Werner (Nordin 1999)

**christophii** Bungartz (Bungartz et al. 2004a)

**circumpallida** H. Magn. Syn.: *Endohyalina circumpallida*

**concinna** Th. Fr. (Bungartz et al. 2004b)

**conspirans** (Nyl.) Vainio (Bungartz 2004)

**crystallifera** (Vainio) Hav. (Goward et al. 1996)

**curatellae** Malme Syn.: *Hafellia curatellae*

**disciformis** (Fr.) Mudd Syn.: *Hafellia disciformis*

**dispersa** A. Massal.

**eganii** Bungartz (Bungartz & Nash. 2004a)

**elegans** Poelt

**elizae** (Tuck.) Tuck. Syn.: *Gassicurtia elizae* (Lendemer et al. 2013)

**epigaea** (Hoffm.) Tuck.

**erubescens** Arnold

[**Hafellia fosteri** Imshaug & Sheard]

**georgei** Trinkaus, H. Mayrhofer & Elix (Bungartz et al. 2007)

**griseovirens** (Turner & Borrer ex Sm.) Almb.

**halonia** (Ach.) Tuck.

**immersa** Lynge

\***imshaugii** Hafellner

**jugorum** (Arnold) Arnold

**lacteoidea** B. de Lesd.

**lepidastra** (Tuck.) Tuck. Syn.: *Lecidea lepidastr*

**leptocline** (Flotow) A. Massal.

**maculata** Bungartz (Bungartz 2004a)

**mamillana** (Tuck.) W. A. Weber Syn.: *Rinodina mamillana*, *R. thomae*

**maritima** (A. Massal.) Bagl. (Bungartz et al. 2007)

**mexicana** J. Steiner (Nordin 2000)

**microbola** (Tuck. ex Fink) Sheard Syn.: *Rinodina microbola*

#**miriquidica** Scheid. (Fryday 2006)

**muriformis** A. Nordin & Tønsberg (Nordin 1999)

**nantiana** B. de Lesd.

**nashii** Bungartz (Bungartz 2004)

**navajoensis** Bungartz (Bungartz 2004)

**nigra** (Fink) Sheard Syn.: *Rinodina nigra*

**occidentalis** Lynge (Lepage 1972)

**ocellata** (Flotow) Körber  
**oidalea** (Nyl.) Tuck. Syn.: *Rhizocarpon oidaleum*  
**parastata** (Nyl.) Zahlbr. Syn.: *Hafellia parastata*  
**pleiotera** Malme Syn.: *Hafellia pleiotera*  
**prospersa** (Nyl.) Riddle (Bungartz et al. 2004b)  
**pullata** Tuck. (Bungartz et al. 2004b)  
**ryanii** Bungartz (Bungartz et al. 2004b)  
**schaereri** De Not.  
**sequax** (Nyl.) Zahlbr. (Bungartz et al. 2004b) Many previous reports are *B. abstracta* (Giralt et al. 2011)  
**sharpiana** Lendemer & R. C. Harris (Lendemer & Harris 2013a)  
**silicicola** B. de Lesd.  
**smaragdula** B. de Lesd.  
**spuria** (Schaerer) Anzi  
**stellulata** (Taylor) Mudd  
**stigmathea** Körber  
**subaethalea** B. de Lesd. (Bungartz & Nash 2004a)  
**subdispersa** Mig. (Nordin 1999)  
**tesserata** Körber (Rico et al. 2003)  
**triseptata** A. Nordin (Nordin 1999)  
**tyrolensis** Körber (Bungartz 2004)  
**uberior** Anzi  
**vilis** Th. Fr.  
 \*adjuncta Th. Fr. (Esslinger & Egan 1995) = *Amandinea adjuncta*  
*aethaleoides* (Nyl.) H. Olivier = *B. aethalea*  
*alboatra* (Hoffm.) Th. Fr. = *Diplotomma alboatrum*  
*ambigua* (Ach.) Malme = *Diplotomma ambiguum*  
*amphidexia* Imshaug ex R. C. Harris = *Buellia* circumpallida  
*atrata* (Sm.) Anzi = *Orphniospora moriopsis*  
*badioatra* (Flörke ex Sprengel) Körber = *Rhizocarpon badioatrum*  
*blasteniospora* Zahlbr. = *B. parastata*  
*blumeri* Zahlbr. = *B. dispersa*  
*caloosensis* Tuck. = *Gassicurtia catasema*  
*canescens* (Dickson) De Not. = *Diploicia canescens*  
*catasema* (Tuck.) Tuck. = *Gassicurtia catasema*  
*chloroleuca* Körber (Bungartz et al. 2007, Spribille & Björk 2008) = *Tetramelas chloroleucus*  
*chlorophaea* (Hepp ex Leighton) Lettau = *Diplotomma chlorophaeum*  
*coccinea* (Fée) Aptroot = *Gassicurtia coccinea*  
*colludens* (Nyl.) Arnold = *Rhizocarpon hochstetteri*  
*coniops* (Wahlenb.) Th. Fr. = *Amandinea coniops*  
*contermina* Arnold = *B. uberior*  
*coracina* (Nyl.) Körber = *Orphniospora moriopsis*  
*curtisii* (Tuck.) Imshaug = *Baculifera curtisii*  
*dakotensis* (H. Magn.) Bungartz = *Amandinea dakotensis*  
*dialyta* (Nyl.) Tuck. = *Chrimofulvea dialyta*  
*epipolia* (Ach.) Mong. = *Diplotomma epipolium*  
*fimbriata* (Tuck.) Imshaug = *B. tesserata*  
*geographica* (L.) Tuck. = *Rhizocarpon geographicum*  
*geophila* (Flörke ex Sommerf.) Lynge = *Tetramelas geophila*, but North American reports are *T. terricolus*  
*glaucomarioidea* Willey ex Tuck. = *Dactylospora glaucomarioides*  
*glaziouana* (Kremp.) Müll. Arg. = *B. mamillana*  
*hassei* Imshaug = *B. griseovirens*  
*imshaugiana* R. C. Harris = *Baculifera imshaugiana*  
 \*inquilina Tuck. = *Dactylospora inquilina*  
*insignis* (Nägeli ex Hepp) Th. Fr. = *Tetramelas insignis*  
*isidians* (Nyl.) Zahlbr. = excluded as doubtful



japonica (Tuck.) Tuck. (Sheard et al. 2008) = *Sculptolumina japonica*  
[langloisii Imshaug = \*Amandinea langloisii\* \(Marbach 2000\)](#)  
 lauricassiae (Fée) Müll. Arg. = *Cratiria lauricassiae*  
 lecanoroides H. Magn. = *Diplotomma venusta* (Bungartz et al. 2007)  
 lepidastroidea Imshaug ex Bungartz (Bungartz 2004) = *B. sequax* (Giralt et al. 2011)  
 leucomela Imshaug = *Amandinea leucomela*  
 malmei Lynge = *B. aethalea*  
 melanochlora (Kremp.) Müll. Arg. = *Cratiria melanochlora*  
 modesta (Kremp.) Müll. Arg. = *Cratiria americana*  
 moriopsis (A. Massal.) Th. Fr. = *Orphniospora moriopsis*  
 myriocarpa (DC.) De Not. = *Amandinea punctata*  
 nivalis (Bagl. & Carestia) Hertel ex Hafellner = *Diplotomma nivalis*  
 notabilis Lynge = *Rinodina notabilis*  
 novomexicana B. de Lesd. = *B. tyrolensis*  
 pachnidisca R. C. Harris = *Gassicurtia subpulcella*  
 papillata (Sommerf.) Tuck. = *Tetramelas papillatus*  
 parasema (Ach.) De Not. = *B. disciformis*  
 penichra (Tuck.) Hasse = *Diplotomma penichrum*  
 pertusariicola Willey ex Tuck. = *Dactylospora pertusariicola*  
 pinastri Erichsen (Erichsen 1940) = *Chrismofulvea pinastri*  
 placodiomorpha Vainio = *Orcularia placodiomorpha*  
 polyspora (Willey) Vainio = *Amandinea polyspora*  
 pruinella Imshaug = *B. tesserata*  
 pueblae B. de Lesd. = *B. dispersa*  
 pulchella (Schrader) Tuck. = *Catolechia wahlenbergii*  
 \*pulverulenta (Anzi) Jatta = *Tetramelas pulverulentus*  
 punctata (Hoffm.) A. Massal. = *Amandinea punctata*  
 punctata var. polyspora (Willey) Fink = *Amandinea polyspora*  
 radiata Tuck. = *Dimelaena radiata*  
 rappii Imshaug ex R.C. Harris = *Endohyalina rappii*  
 retrovertens Tuck. = *B. dispersa* (Bungartz et al. 2002)  
 rinodinoides Anzi = misidentification for North America  
 rinodinospora Riddle = *B. parastata*  
 rubifaciens R.C. Harris = *Chrismofulvea rubifaciens*  
 saurina W. A. Weber = *Rhizocarpon saurinum*  
 saxicola B. de Lesd. = *B. sequax*  
 scabrosa (Ach.) A. Massal. = *Epilichen scabrosus*  
 semitensis Tuck. = *B. concinna*  
 stigmaea Tuck. = *B. maculata*  
 stillingiana J. Steiner = *B. erubescens* (Bungartz et al. 2007)  
 subalbula (Nyl.) Müll. Arg. North American reports are *B. maritima* (Bungartz et al. 2007)  
 subdisciformis (Leighton) Jatta (Mohr 1901) = *B. disciformis*  
 subpostumum Nyl. (Mohr 1901) = *Rhizocarpon subpostumum*, but a misidentification for North America  
 subpulcella Vainio = *Gassicurtia subpulcella*  
 tergestina J. Steiner & Zahlbr. = *B. dispersa*  
 terricola A. Nordin (Nordin 1999) = *Tetramelas terricolus*  
 thomae (Tuck.) Imshaug = *B. mamillana*  
 tolucae B. de Lesd. (Nordin 1999) = *B. mexicana* (Bungartz et al. 2007)  
 triphragmioides Anzi = *Tetramelas triphragmioides*  
 tucsonensis Zahlbr. = *B. dispersa* (Bungartz et al. 2007)  
 turgescens Tuck. = *B. badia* (Bungartz & Nash 2004c)  
 turgescensoides Fink = *B. badia* (Bungartz & Nash 2004c)  
 venusta (Körber) Lettau = *Diplotomma venustum*  
 vernicoma (Tuck.) Tuck. = *Gassicurtia vernicoma*  
 verruculosa (Sm.) Mudd = *B. aethalea*

verruculosa auct. = *B. ocellata*  
wahlenbergii (Ach.) Sheard = *Catolechia wahlenbergii*  
wheeleri R. C. Harris = *Ciposia wheeleri*  
zahlbruckneri J. Steiner = *B. erubescens*  
zahlbruckneri sensu Imshaug = mostly *Tetramelas chloroleucus* (Bungartz et al. 2007)

#### **BUELLIELLA** Fink

\***inops** (Triebel & Rambold) Hafellner Syn.: *Karschia inops* (Hafellner 2004a)  
\***minimula** (Tuck.) Fink  
\***physciicola** Poelt & Hafellner (Esslinger & Egan 1995)  
\***poetschii** Hafellner (Hafellner et al. 2008)  
\***trypethelii** (Tuck.) Fink  
\**inquilina* (Tuck.) Fink = *Dactylospora inquilina*  
\**nuttallii* (Calk. & Nyl.) Fink = *Dactylospora lobariella*  
\**parmeliarum* (Sommerf.) Fink = *Abrothallus parmeliarum*  
\**saxatilis* (Schaerer) Fink = *Dactylospora saxatilis* var. *saxatilis*  
\**usneae* (Rabenh.) Fink = misidentification for North America

#### **BUELLIOPSIS** A. Schneider = **BUELLIA**

*papillata* (Sommerf.) Fink = *Tetramelas papillata*  
*vernica* (Tuck.) A. Schneider = *Gassicurtia vernica*

#### **BULBOTHRIX** Hale

**confoederata** (W. L. Culb.) Hale Syn.: *Parmelia confoederata*  
**coronata** (Fée) Hale Syn.: *Parmelia coronata*  
**isidiza** (Nyl.) Hale  
**laevigatula** (Nyl.) Hale Syn.: *Parmelia laevigatula*  
**scortella** (Nyl.) Hale (Benatti & Elix 2012) Syn.: *Parmelia njalensis*, *P. scortella*  
*goebelii* (Zenker) Hale North American reports are *B. scortella* (Benatti & Elix 2012)

#### **BULLATINA** Vězda & Poelt

*aspidota* (Vainio) Vězda & Poelt = *Calenia aspidotum*

#### **BUNODOPHORON** A. Massal.

**melanocarpum** (Sw.) Wedin Syn.: *Sphaerophorus melanocarpus*

#### **BURGELLA** Diederich & Lawrey (Diederich & Lawrey 2007)

\***flavoparmeliae** Diederich & Lawrey

#### **BYSSOLOMA** Trevisan

**absconditum** Farkas & Vězda (Seavey & Seavey 2012)  
**chlorinum** (Vainio) Zahlbr. (Lücking et al. 2011b)  
**leucoblepharum** (Nyl.) Vainio  
**maderense** Breuss (Breuss 2016)  
**marginatum** (Arnold) Sérus.  
**meadii** (Tuck. ex Willey) S. Ekman Syn.: *Bacidia meadii*, *Biatora meadii*, *Bilimbia meadii*  
**subdiscordans** (Nyl.) P. James  
**tricholomum** (Mont.) Zahlbr. Syn.: *Bilimbia tricholoma*  
*pubescens* Vězda ex R.C. Harris (Harris 1995a) = *B. meadii* (Brodo et al. 2001)  
*rotuliforme* (Müll. Arg.) R. Sant. = *B. subdiscordans*

#### **CAERULEUM** K. Knudsen & L. Arcadia (Arcadia & Knudsen 2012)

**heppii** (Nägeli ex Körber) K. Knudsen & L. Arcadia Syns.: *Acarospora aeruginosa*, *A. heppii*, *Myriospora heppii*  
**immersum** (Fink) K. Knudsen & L. Arcadia Syns.: *Acarospora immersa*, *Myriospora immerse*



**CALENIA** Müll. Arg.

**aspidotum** (Vainio) Vězda Syn.: *Bullatina aspidota* (Lücking et al. 2007)

**CALICIELLA** Vainio = non-lichenized fungi

**CALICIUM** Pers.

**abietinum** Pers.

**adaequatum** Nyl.

**adpersum** Pers.

**chlorosporum** F. Wilson

**corynellum** (Ach.) Ach.

**denigratum** (Vainio) Tibell (McMullin et al. 2012)

**glaucellum** Ach.

**hyperelloides** Nyl.

**lenticulare** Ach.

**leucochlorum** Tuck.

**montanum** Tibell (Kolb & Spribille 2001)

**parvum** Tibell

**pinastri** Tibell (Selva 2013)

**quercinum** Pers.

**salicinum** Pers.

**sequoiae** C. Williams & Tibell (Williams & Tibell 2008)

**trabinellum** (Ach.) Ach

**viride** Pers.

*albonigrum* Nyl. = *Mycocalicium albonigrum*

*#asikkalense* Vainio = *Chaenothecopsis pusilla*

*curtisii* Tuck. = *Phaeocalicium curtisii*

*\*disseminatum* Ach. = *Microcalicium disseminatum*

*#floerkei* Zahlbr. = *Chaenothecopsis pusilla*

*fuscipes* Tuck. = *Mycocalicium fuscipes*

*hemisphaericum* Howard = *C. adaequatum*

*hyperellum* (Ach.) Ach. = *C. viride*

*lentigerellum* Tuck. = *C. lenticulare*

*lichenoides* (L.) Schumacher = *C. salicinum*

*melanophaeum* Sommerf. (Mohr 1901) = *Mycocalicium albonigrum*

*microcephalum* (Sm.) Ach. = *Sphinctrina anglica*

*minutissimum* G. Merr. = *Phaeocalicium minutissimum*

*+parietinum* Ach. (Claassen 1912) = *Mycocalicium subtile*

*+populneum* Brond. ex Duby = *Phaeocalicium populneum*

*#pusillum* auct. = *Chaenothecopsis pusilla*

*pusiolum* Ach. = *Chaenothecopsis pusiola*

*queenslandiae* (F. Wilson) Tibell = *C. chlorosporum*

*ravenelii* Tuck. = *Mycocalicium ravenelii*

*roscidum* (Ach.) Ach. nom. superfl. = *C. adpersum*

*roscidum* var. *trabinellum* (Ach.) Schaerer = *C. trabinellum* for North American records

*sphaerocephalum* (L.) Ach. = (?) *C. lichenoides*

*#subpusillum* Vainio = *Chaenothecopsis pusilla*

*subquercinum* Asahina = *C. lenticulare*

*+subtile* Pers. = *Mycocalicium subtile*

*trachelinum* Ach. = *C. salicinum*

*turbinatum* Pers. = *Sphinctrina turbinata*

**CALLOME** Otálora & Wedin (Otálora et al. 2014)

**multipartita** (Sm.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema multipartitum*

**CALOGAYA** Arup, Frödén & Søchting (Arup et al. 2013)

- arnoldii** (Wedd.) Arup, Frödén & Søchting Syn.: *Caloplaca arnoldii*, *C. arnoldii* subsp. *obliterata*
- biatorina** (A. Massal.) Arup, Frödén & Søchting Syn.: *Caloplaca biatorina*
- bryochryson** (Poelt) Vondrák Syns.: *Caloplaca alaskensis*, *C. bryochryson* (Vondrák et al. 2016)
- decipiens** (Arnold) Arup, Frödén & Søchting Syn.: *Caloplaca decipiens*
- lobulata** (Flörke) Arup, Frödén & Søchting Syn.: *Caloplaca lobulata*
- pusilla** (A. Massal.) Arup, Frödén & Søchting Syn.: *Caloplaca pusilla*
- alaskensis** (Wetmore) Arup, Frödén & Søchting = *C. bryochryson* (Vondrák et al. 2016)

**CALOPADIA** Vězda

- editae** Vězda ex Chaves & Lücking (Lücking et al. 2011b)
- floridana** Hodges & Lücking (Lücking et al. 2011b)
- fusca** (Müll. Arg.) Vězda Syn.: *Lopadium fuscum*
- imshaugii** Common & Lücking (Lücking et al. 2011b)
- lecanorella** (Nyl.) Kalb & Vězda (Lücking et al. 2011b)
- perpallida** (Nyl.) Vězda (Lücking et al. 2011b)
- puiggarii** (Müll. Arg.) Vězda Syn.: *Lopadium puiggarii*
- schomerae** F. Seavey & J. Seavey (Seavey & Seavey 2011)
- subcoerulescens** (Zahlbr.) Vězda (Lücking et al. 2011b)

**CALOPLACA** Th. Fr.

- adnexa** Vězda
- ahtii** Søchting
- albovariegata** (B. de Lesd.) Wetmore Syn.: *Pyrenodesmia albovariegata*
- alcarum** Poelt
- approximata** (Lynge) H. Magn.
- atroalba** (Tuck.) Zahlbr. Syn.: *Lecania perproxima* (van den Boom & Ryan 2004b)
- atrocyanescens** (Th. Fr.) H. Olivier (Spribille et al. 2010)
- atroflava** (Turner) Mong.
- atrosanguinea** (G. Merr.) I. M. Lamb Syns.: *Blastenia atrosanguinea*, *Lecanora atrosanguinea*
- borealis** (Vainio) Poelt
- brouardii** (B. de Lesd.) Zahlbr. (Nash et al. 1998)
- brunneola** Wetmore
- californica** Zahlbr.
- camptidia** (Tuck.) Zahlbr.
- carolinae** H. Magn.
- cascadensis** H. Magn.
- catalinae** H. Magn.
- celata** Th. Fr.
- cerina** (Ehrh. ex Hedwig) Th. Fr. (Laundon 2005)
- chlorina** (Flotow) Sandst.
- cinnabarina** (Ach.) Zahlbr.
- conversa** (Kremp.) Jatta
- dakotensis** Wetmore
- demissa** (Körber) Arup & Grube Syns.: *Lecanora demissa*, *L. incusa*, *L. subolivascens* (Arup & Grube 1999)
- diphasia** (Tuck.) Wetmore Syns.: *Lecanora diphasia*, *Blastenia diphasia*
- diphyodes** (Nyl.) Jatta Syn.: *Lecania arctica*
- dispersa** B. de Lesd.
- durietzii** H. Magn.
- epiphora** (Taylor) C. W. Dodge (Wetmore 2004a)
- \*epithallina** Lynge
- erichansenii** S. Y. Kondr., A. Thell, Kärnefelt & Elix (Vondrák et al. 2011)
- erythrantha** (Tuck.) Zahlbr. (Wetmore 2007b)
- eugyra** (Tuck.) Zahlbr.
- exsecuta** (Nyl.) Dalla Torre & Sarnth.



**ferrugineofusca** (Vainio) H. Magn.  
**floridana** (Tuck.) S. Tucker Syns.: *Blastenia floridana*, *Lecanora floridana*  
**fraudans** (Th. Fr.) H. Olivier Syn.: *Blastenia fraudans*  
**fraxinea** I. M. Lamb  
**fulvolutea** (Arnold) Jatta (Thomson 1997)  
**granularis** (Müll. Arg.) Zahlbr. (Wetmore 2004b)  
**\*grimmiae** (Nyl.) H. Olivier  
**groenlandica** Lynge  
**insularis** Poelt  
**isidiigera** Vězda (Šoun et al. 2011)  
**kamczatica** (Savicz) Savicz (Søchting 2004)  
**lecanorae** F. Seavey & J. Seavey (Seavey & Seavey 2012)  
**lecanoroides** Lendemer (Lendemer et al. 2010)  
**lignicola** Wetmore (Wetmore 2009)  
**lithophila** H. Magn.  
**litoricola** Brodo  
**livida** (Hepp) Jatta  
**microphyllina** (Tuck.) Hasse Syn.: *Placodium microphyllum*  
**[Pyrenodesmia montana B. de Lesd.]**  
**neonii** B. de Lesd.  
**neotropica** Wetmore  
**nivalis** (Körber) Th. Fr.  
**[Blastenia novomexicana Fink]**  
**obamae** K. Knudsen (Knudsen 2009)  
**obesimarginata** Søchting (Søchting 2004)  
**oblongula** (H. Magn.) Wetmore Syns.: *Apatopla oblongula*, *Lecidea oblongula*  
**obscura** (J. Lahm) Th. Fr.  
**oleicola** (J. Steiner) van den Boom & Breuss (Goward et al. 1996)  
**oregona** H. Magn.  
**parvula** Wetmore  
**peleophylla** (Tuck.) Zahlbr.  
**pellodella** (Nyl.) Hasse Syn.: *Pyrenodesmia elaeodes*  
**phaeocarpella** (Nyl.) Zahlbr.  
**phyllidizans** Wetmore (Wetmore 2003)  
**pinicola** H. Magn.  
**pollinii** (A. Massal.) Jatta  
**pratensis** Wetmore (Wetmore 2009)  
**pygmaea** Wetmore (Wetmore 2007a)  
**quercicola** H. Magn.  
**reptans** Lendemer & Hodgkinson (Hodgkinson & Lendemer 2012)  
**rubelliana** (Ach.) Lojka  
**[Blastenia rubrofusca B. de Lesd.]**  
**saxicola** (Hoffm.) Nordin  
**schaererii** (Flörke) Zahlbr.  
**schoeferi** Poelt (Wetmore 2007a)  
**sibirica** H. Magn. (Søchting & Olech 1995)  
**sideritis** (Tuck.) Zahlbr.  
**sipeana** H. Magn.  
**sonorae** Wetmore (Wetmore 1996)  
**soralifera** Vondrák & Hrouzek (Wetmore 2009)  
**sorocarpa** (Vainio) Zahlbr.  
**spaldingii** Zahlbr.  
**spitsbergensis** H. Magn.  
**stanfordensis** H. Magn.  
**stillicidiorum** (Vahl) Lynge (Šoun et al. 2011, Arup et al. 2013)  
**subnitida** (Malme) Zahlbr.

**subpyraceella** (Nyl.) Zahlbr.  
**tornoënsis** H. Magn.  
**turkuensis** (Vainio) Zahlbr. (Šoun et al. 2011)  
**ulcerosa** Coppins & P. James (Wetmore 2004b)  
**ulmorum** (Fink) Fink (Šoun et al. 2011) But see also Wetmore 2007b  
**urceolata** B. de Lesd.  
**verrucosa** Hasse  
**wetmorei** Nimis, Poelt & Tretiach  
**wrightii** (Tuck.) Fink  
**yuchiorum** Lendemer & C. A. Morse (Lendemer & Morse 2010)  
 alaskensis Wetmore (Wetmore 2004b) = [Calogaya bryochryson \(Vondrák et al. 2016\)](#)  
 alboatra (Tuck.) Zahlbr. (Flowers 1953/1954) Misspelling of C. atroalba  
 amabilis (Fink) Zahlbr. = C. pellodella  
 ammiospila (Wahlenb.) H. Olivier = Blastenia ammiospila  
 arenaria (Pers.) Müll. Arg. = Rufoplaca arenaria  
 arizonica H. Magn. = [Gyalolechia epiphyta \(Vondrák et al. 2016\)](#)  
 arizonica E. Rudolph non H. Magn. = C. pellodella  
 arnoldii (Wedd.) Zahlbr. subsp. oblitterata (Pers.) Gaya (Gaya 2009) = Calogaya arnoldii  
 aurantia (Pers.) Hellbom = Variospora aurantia  
 aurantiaca (Lightf.) Th. Fr. = Gyalolechia flavorubescens  
 austrocitrina Vondrák, Říha, Arup & Söchting (Knudsen & Kocourková 2010e) = Flavoplaca austrocitrina  
 biatorina (A. Massal.) J. Steiner (Gaya 2009) = Calogaya biatorina  
 bolacina (Tuck.) Herre = Polycauliona bolacina  
 bolanderi (Tuck.) H. Magn. = Polycauliona luteominea var. bolanderi  
 bracteata (Hoffm.) Jatta = Gyalolechia bracteata  
 brattiae W. A. Weber = Polycauliona brattiae  
 bryochryson Poelt = [Gyalolechia bryochryson \(Vondrák et al. 2016\)](#)  
 caesiorufa (Wibel) Flagey = removed as a nomen confusum (Wetmore 1996)  
 caesiorufella (Nyl.) Zahlbr. = C. phaeocarpella  
 callopisma (Ach.) Th. Fr. = Variospora aurantia  
 castellana (Räsänen) Poelt If treated as separate from C. invadens (=Pachypeltis invadens) as done by e.g. Alstrup (1991), this species has not yet been reported for North America  
 cerinelloides (Erichsen) Poelt (Qian & Klinka 1998) = Athallia cerinelloides  
 chrysodeta (Vainio) Dombr. = Leproplaca chrysodeta  
 chrysophthalma Degel. = Solitaria chrysophthalma  
 cinnamomea (Th. Fr.) H. Olivier = Blastenia ammiospila  
 cirrochroa (Ach.) Th. Fr. = Leproplaca cirrochroa  
 citrina (Hoffm.) Th. Fr. = Flavoplaca citrina  
 cladodes (Tuck.) Zahlbr. = Pachypeltis cladodes  
 constipans (Nyl.) Zahlbr. = Edrudia constipans  
 coralloides (Tuck.) Hulting = Polycauliona coralloides  
 crenularia (With.) J. R. Laundon = Blastenia crenularia, but a misidentification for North America (Wetmore 1996)  
 crenulatella (Nyl.) H. Olivier (Knudsen & La Doux 2005) = Xanthocarpia crenulatella  
 decipiens (Arnold) Blomb. & Forssell = Calogaya decipiens  
 diplacia (Ach.) Riddle = doesn't occur N of Mexico (Wetmore 1994)  
 discernenda (Nyl.) Zahlbr. = C. saxicola  
 discoidalis (Vainio) Lynge = Blastenia ammiospila  
 discolor (Willey) Fink = Gyalolechia xanthostigmoidea (Wetmore 2001, Arup et al. 2013)  
 elegans (Link) Th. Fr. = Rusavskia elegans  
 epiphyta Lynge (Söchting & Tønsberg 1997) = [Gyalolechia epiphyta \(Vondrák et al. 2016\)](#)  
 erythrella (Ach.) Kieffer = Gyalolechia flavovirescens  
 feracissima H. Magn. = Xanthocarpia feracissima  
 ferruginea (Hudson) Th. Fr. = Blastenia ferruginea  
 festiva (Ach.) Zwackh = Caloplaca crenularia, but North American records incorrect according to



Wetmore (1996)  
 flavocitrina (Nyl.) H. Olivier (Arup 2006) = *Flavoplaca flavocitrina*  
 flavogranulosa Arup = *Polycauliona flavogranulosa*  
 flavorubescens (Hudson) J. R. Laundon = *Gyalolechia flavorubescens*  
 flavovirescens (Wulfen) Dalla Torre & Sarnth. = *Gyalolechia flavovirescens*  
 fulgens (Sw.) Körber = *Gyalolechia fulgens*  
 furfuracea H. Magn. (Wetmore 2004a) = *Blastenia furfuracea*  
 galactophylla (Tuck.) Zahlbr. = *Squamulea galactophylla*  
 gilva (Hoffm.) Zahlbr. = *C. cerina*  
 glorieae sensu Aptroot (1996) non Werner & Llimona = *Polycauliona verruculifera* (Arup 1997)  
 granulosa (Müll. Arg.) Jatta = *Flavoplaca granulosa*  
 herbidella (Hue) H. Magn. = *Blastenia herbidella*, but a misidentification for North America (Wetmore 2004a)  
 herrei Hasse = *C. atrosanguinea*  
 holocarpa (Hoffm. ex Ach.) A. E. Wade = *Athallia holocarpa*  
 ignea Arup = *Polycauliona ignea*  
 impolita Arup = *Polycauliona impolita*  
 inconspicua Arup = *Polycauliona inconspicua*  
 intermedia (B. de Lesd.) Zahlbr. = *C. cinnabarina* (Wetmore & Kärnefelt 1999)  
 invadens Lynge (Thomson 1997) = *Pachypeltis invadens*  
 irrubescens (Arnold) Zahlbr. = *Squamulea subsoluta*  
 jungermanniae (Vahl) Th. Fr. = *Bryoplaca jungermanniae*  
 lactea (A. Massal.) Zahlbr. = *Xanthocarpia lactea*  
 laeta H. Magn. = *Polycauliona luteominia* var. *luteominia*  
 lamprocheila (DC.) Flagey = *Rufoplaca arenaria*  
 leucoraea (Ach. ex Flörke) Branth = *Bryoplaca sinapisperma*  
 lobulata (Flörke) B. de Lesd. = *Calogaya lobulata*  
 ludificans Arup = *Polycauliona ludificans*  
 luteoalba (Turner) Th. Fr. = *Cerothallia luteoalba*  
 luteominia (Tuck.) Zahlbr. var. *luteominia* = *Polycauliona luteominia* var. *luteominia*  
 luteominia var. *bolanderi* (Tuck.) Arup = *Polycauliona luteominia* var. *bolanderi*  
 marina (Wedd.) Zahlbr. subsp. *americana* Arup = *Flavoplaca marina*  
 marmorata (Bagl.) Jatta (Knudsen & La Doux 2005) = *Xanthocarpia marmorata*  
 microthallina (Wedd.) Zahlbr. = *Flavoplaca microthallina*  
 modesta (Zahlbr.) Fink = *Squamulea subsoluta*  
 murorum (Hoffm.) Th. Fr. = *C. saxicola*  
 nashii Nav.-Ros., Gaya & Hladun (Knudsen & La Doux 2005) = *Polycauliona nashii*  
 obliterans (Nyl.) Blomb. & Forssell = *Leproplaca obliterans*  
 oxfordensis Fink = *Rufoplaca oxfordensis*  
 parviloba Wetmore (Wetmore 2003) = *Squamulea parviloba*  
 paulsenii (Vainio) Zahlbr. = misidentification for North America  
 persimilis Wetmore (Wetmore 2004b) = *Gyalolechia persimilis*  
 phlogina (Ach.) Flagey (Richardson et al. 2009, Vondrák et al. 2010) = *Polycauliona phlogina*  
 pusilla (A. Massal.) Zahlbr. (Gaya 2009) = *Calogaya pusilla*  
 pyracea (Ach.) Zwackh (Arup 2009) = *Athallia pyracea*  
 rosei Hasse = *Polycauliona rosei*  
 sarcopisioides (Körber) Zahlbr. = *C. obscurella*  
 saxifragarum Poelt = *Athallia saxifragarum*  
 scopularis (Nyl.) Lettau = *Athallia scopularis*  
 scotoplaca (Nyl.) H. Magn. = misidentification for North America (Wetmore 1996)  
 sinapisperma (Lam. & DC.) Maheu & A. Gillet = *Bryoplaca sinapisperma*  
 soorediata (Vainio) Du Rietz = *Rusavskia soorediata*  
 splendens (Darb.) Zahlbr. = *Rusavskia elegans*  
 squamosa (B. de Lesd.) Zahlbr. = *Squamulea squamosa*  
 stantonii W. A. Weber ex Arup = *Gyalolechia stantonii*  
 stellata Wetmore & Kärnefelt (Wetmore & Kärnefelt 1998) = *Polycauliona stellata*

stipitata Wetmore (Wetmore 1999) = *Gyalolechia stipitata*  
 submexicana (B. de Lesd.) Zahlbr. = *Candelina submexicana*  
 subnigricans H. Magn. = *C. atrosanguinea*  
 subolivacea (Th. Fr.) Lynge = *Parvoplaca tirolensis*  
 subsoluta (Nyl.) Zahlbr. (Wetmore 2003) = *Squamulea subsoluta*  
 teicholyta (Ach.) J. Steiner = misidentification for North America (Wetmore 1996)  
 tetraspora (Nyl.) H. Olivier = *Bryoplaca tetraspora*  
 texana Wetmore & Kärnefelt (Wetmore & Kärnefelt 1998) = *Wetmoreana texana*  
 thallincola (Wedd.) Du Rietz Not in North America  
 tirolensis Zahlbr. = *Parvoplaca tirolensis*  
 tominii (Savicz) Ahlner (Wetmore 2001) = *Xanthocarpia tominii*  
 trachyphylla (Tuck.) Zahlbr. = *Xanthomendoza trachyphylla*  
 variabilis (Pers.) Müll. Arg. = *Pyrenodesmia variabilis*  
 velana (A. Massal.) Du Rietz = *Variospora velana*  
 verruculifera (Vainio) Zahlbr. = *Polycauliona verruculifera*  
 vicaria H. Magn. = *C. kamczatica*  
 vitellinula (Nyl.) H. Olivier = *Athallia vitellinula*  
 xanthostigmoidea (Räsänen) Zahlbr. = *Gyalolechia xanthostigmoidea*

**CALOPLACOPSIS** (Zahlbr.) B. de Lesd. = **CANDELARIELLA**  
 submexicana (B. de Lesd.) B. de Lesd. = *Candelina submexicana*

**CALVITIMELA** Hafellner (Hafellner & Türk 2001)  
**aglaea** (Sommerf.) Hafellner Syn.: *Lecidea aglaea*, *L. aglaeida* (Hertel & Andreev 2003), *L. shushanii*, *Tephromela aglaea*, *T. aglaeida*  
**armeniaca** (DC.) Hafellner Syn.: *Lecidea armeniaca*, *Tephromela armeniaca*  
**melaleuca** (Sommerf.) R. Sant. (Spribille et al. 2011, Dillman et al. 2012)  
**perlata** (Haugan & Timdal) R. Sant. (Bendiksby et al. 2015)  
**talayana** (Haugan & Timdal) Andreev (Hodkinson et al. 2009)  
**testaceoatra** (Vainio) Hafellner Syn.: *Lecidea testaceoatra*, *L. arctogena*, *Tephromela testaceoatra*

**CAMPYLOTHELIUM** Müll. Arg.  
 amylosporum (Vainio) R. C. Harris = *Polymeridium proponens*  
 nitidum Zahlbr. = *Laurera megasperma*

**CANDELARIA** A. Massal.  
**concolor** (Dickson) Stein  
**fibrosa** (Fr.) Müll. Arg.  
**pacifica** M. Westb. & Arup (Westberg & Arup 2011)  
 concolor var. *effusa* (Tuck.) G. Merr. & Burnham = *C. concolor* (Lendemer & Westberg 2010)

**CANDELARIELLA** Müll. Arg.  
**aggregata** M. Westb. (Westberg 2007a)  
**antennaria** Räsänen  
**arctica** (Körber) R. Sant.  
**aurella** (Hoffm.) Zahlbr.  
**biatorina** M. Westb. (Westberg 2007c)  
**borealis** M. Westb. (Westberg 2007b)  
**californica** M. Westb. (Westberg 2007a)  
**canadensis** H. Magn.  
**citrina** B. de Lesd.  
**clarkii** E. Tripp & Lendemer (Tripp & Lendemer 2015)  
**complanata** M. Westb. (Westberg 2007a)  
**coralliza** (Nyl.) H. Magn.  
**corviniscalensis** C. A. Morse & M. Westb. (Westberg et al. 2011b)  
**deppeanae** M. Westb. (Westberg 2007a)



**efflorescens** R. C. Harris & W. R. Buck  
**granuliformis** M. Westb. (Westberg et al. 2011b)  
**immarginata** M. Westb. (Westberg 2007a)  
**kansuensis** H. Magn. (Westberg 2007a)  
**lutella** (Vainio) Räsänen  
**minuta** Reichert & Galun (Weber & Wittman 2000)  
**placodizans** (Nyl.) H. Magn.  
**rosulans** (Müll. Arg.) Zahlbr.  
**spraguei** (Tuck.) Zahlbr.  
**subdeflexa** (Nyl.) Lettau  
**vitellina** (Hoffm.) Müll. Arg.  
**xanthostigma** (Ach.) Lettau  
**xanthostigmoides** (Müll. Arg.) R. W. Rogers (Lendemer & Westberg 2010)  
 athallina (Wedd.) Du Rietz Excluded from North America (Westberg et al. (2011b)  
 cerinella (Flörke) Zahlbr. = *C. aurella*  
[corallizoides](#) M. Westb. [Erroneously listed here; reported only from Mexico \(Westberg 2007a\)](#)  
 crenulata (Wahlenb.) Zahlbr. = *C. arctica*  
 deflexa (Nyl.) Zahlbr. = *C. aurella*, but N. American reports are mostly *C. antennaria* (Westberg 2007a)  
 dispersa (Räsänen) Hakul. Excluded from North America (Westberg et al. 2011b)  
 epixantha auct. = *C. aurella*  
 epixantha (Ach.) Sandst. = [Candelariella aurella](#)  
 holophaea (Mont.) Zahlbr. = *Solenopsora holophaea*  
 hudsonica Hakul. = *C. canadensis*  
 kuusamoensis Räsänen var. *areolata* Hakul. Excluded from North America (Westberg et al. 2011b)  
 luteoalba (Turner) Lettau = *Cerothallia luteoalba*  
 medians (Nyl.) Sm. North American reports probably refer to *Candelina submexicana*  
 plumbea Poelt & Vězda Excluded from North America (Westberg et al. 2011b)  
 reflexa (Nyl.) Lettau = misidentification for North America (Westberg et al. 2007)  
 stenospora B. de Lesd. Excluded from North America (Westberg et al. 2011b)  
 submexicana B. de Lesd. = *Candelina submexicana*  
 terrigena Räsänen = *C. citrina* (Westberg 2007a, Westberg 2009)

#### **CANDELINA** Poelt

**mexicana** (B. de Lesd.) Poelt  
**submexicana** (B. de Lesd.) Poelt Syns.: *Caloplacopsis submexicana*, *Candelariella submexicana*, *Caloplaca submexicana*. North American reports of *Candelariella medians* (Nyl.) Sm. probably belong here.

#### **CANOMACULINA** Elix & Hale = **PARMOTREMA** (Blanco et al. 2005)

conferenda (Hale) Elix = *Parmotrema conferendum*  
 haitiensis (Hale) Elix = *Parmotrema haitiensis*  
 neotropica (Kurok.) Elix = *Parmotrema neotropicum*  
 subsumpta (Nyl.) Elix = *Parmotrema subsumptum*  
 subtinctoria (Zahlbr.) Elix = *Parmotrema subtinctorium*

#### **CANOPARMELIA** Elix & Hale

**alabamensis** (Hale & McCull.) Elix (Elix 2001) Syns: *Paraparmelia alabamensis*, *Parmelia alabamensis*, *Pseudoparmelia alabamensis*  
**amazonica** (Nyl.) Elix & Hale Syns.: *Parmelia amazonica*, *Pseudoparmelia amazonica*  
**caroliniana** (Nyl.) Elix & Hale Syns.: *Parmelia caroliniana*, *Pseudoparmelia caroliniana*  
**cryptochlorophaea** (Hale) Elix & Hale Syns.: *Parmelia cryptochlorophaea*, *Pseudoparmelia cryptochlorophaea*  
**martinicana** (Nyl.) Elix & Hale Syns.: *Parmelia martinicana*, *Pseudoparmelia martinicana*  
**salacinifera** (Hale) Elix & Hale Syns.: *Parmelia salacinifera*, *Pseudoparmelia salacinifera*  
**texana** (Tuck.) Elix & Hale Syns.: *Parmelia texana*, *Pseudoparmelia texana*

*amabilis* Heiman & Elix (Heiman & Elix 1999) = *Canoparmelia caroliniana* (Lendemer & Ruiz 2015)  
*crozalsiana* (B. de Lesd. ex Harm.) Elix & Hale = *Crespoa crozalsiana*

**CAPRONIA** Sacc.

\***thamnoliae** Zhurb. (Zhurbenko 2012)

\***peltigerae** (Fuckel) D. Hawksw. (Zhurbenko & Laursen 2003) = *Knufia peltigerae* (Réblová et al. 2013)

**CARBACANTHOGRAPHIS** Staiger & Kalb (Staiger 2002)

**candidata** (Nyl.) Staiger & Kalb Syn.: *Graphis candidata* (Staiger 2002)

**marcescens** (Fée) Staiger & Kalb Syn.: *Graphina marcescens*, *G. plittii*, *Graphis marcescens* (Staiger 2002)

**muriformis** E. Tripp & Lendemer (Tripp et al. 2010)

**CARBONEA** (Hertel) Hertel

\***aggregantula** (Müll. Arg.) Diederich & Triebel (Goward et al. 1996)

**assimilis** (Körber) Hafellner & Hertel Syn.: *Lecidea assimilis*

**atronivea** (Arnold) Hertel Syn.: *Lecidea atronivea*

\***intrudens** (H. Magn.) Hafellner (Dillman et al. 2012) Syn.: *Lecidea intrudens*

**latypizodes** (Nyl.) Knoph & Rambold (Knoph et al. 2004) Syns.: *Lecidea austrocalifornica*, *L. subplebeia* (Knudsen et al. 2008b), *L. subcontinuior*, *L. amabilis*, *Mycobilimbia austrocalifornica*

\***supersparsa** (Nyl.) Hertel (Diederich 2003)

\***vitellinaria** (Nyl.) Hertel Syn.: *Lecidea vitellinaria*

**vorticosa** (Flörke) Hertel Syn.: *Lecidea vorticosa*

*intrusa* (Th. Fr.) Rambold & Triebel (Hinds et al. 2002) = *Scoliciosporum intrusum*

**CARBONICOLA** Bendiksby & Timdal (Bendiksby & Timdal 2013)

**anthracophila** (Nyl.) Bendiksby & Timdal Syns.: *Biatora anthracophila*, *Hypocenomyce anthracophila*, *Lecidea anthracophila*, *Psora anthracophila*

**myrmecina** (Ach.) Bendiksby & Timdal Syn.: *Hypocenomyce castaneocinerea*

**CATAPYRENIUM** Flotow (Breuss 1996)

**cinereum** (Pers.) Körber Syn.: *Dermatocarpon cinereum*, *D. hepaticum*

**daedaleum** (Kremp.) Stein Syn.: *Dermatocarpon daedaleum*

**globosum** J. W. Thomson

**granulosum** (B. de Lesd.) J. W. Thomson Syns.: *Endopyrenium crustaceum*, *E. granulosum*, *Dermatocarpon granulosum*

**psoromoides** (Borrer) R. Sant.

**squamellum** (Nyl. ex Hasse) J. W. Thomson Syn.: *Dermatocarpon squamellum*

*acarosporoides* (Zahlbr.) J. W. Thomson = *Placidium acarosporoides*

*andicolum* Breuss = *Placidium andicola*

*caeruleopulvinum* J. W. Thomson = *Placopyrenium caeruleopulvinum*

*chilense* (Räsänen) Breuss = *Placidium chilense*

#*compactum* (A. Massal.) R. Sant. = *Heteroplacidium compacta*

*congestum* Breuss & McCune = *Heteroplacidium congestum*

*heppioides* (Zahlbr.) J. W. Thomson = *Placopyrenium heppioides*

*lachneum* (Ach.) R. Sant. = *Placidium lachneum*

*lacinulatum* (Ach.) Breuss = *Clavascidium lacinulatum*

*michelii* (A. Massal.) R. Sant. = *Placidium michelii*

*norvegicum* Breuss = *Placidium norvegicum*

*plumbeum* (B. de Lesd.) J. W. Thomson (p.p.) = *Verrucaria inficiens* (Breuss 1998)

*podolepis* Breuss = *Placidium podolepis*

*rufescens* (Ach.) Breuss = *Placidium rufescens*

*schaereri* (Fr.) R. Sant. = *Placopyrenium coloradoense* for North American reports

*squamulosum* (Ach.) Breuss = *Placidium squamulosum*

*tuckermanii* (Rav. ex Mont.) J. W. Thomson = *Placidium arboreum*



umbrinum Breuss = Clavascidium umbrinum  
waltheri (Kremp.) Körber = Involucropyrenium waltheri  
zahlbruckneri (Hasse) J. W. Thomson = Placopyrenium stanfordii

**CATILLARIA** A. Massal.

**atomarioides** (Müll. Arg.) H. Kiliás (Kocourková et al. 2010)  
**chalybeia** (Borrer) A. Massal.  
**contristans** (Nyl.) Zahlbr. (Miller et al. 2005)  
**cupressi** Zahlbr.  
**erysiboides** (Nyl.) Th. Fr. Syn.: Arthonia carneorufa (Printzen & Tønsberg 1999)  
**flavens** (Willey) Fink  
**glauconigrans** (Tuck.) Hasse  
**lenticularis** (Ach.) Th. Fr.  
**\*lobariicola** (Alstrup) Coppins & Aptroot (Spribill et al. 20120)  
**musciicola** Lynge  
**nigroclavata** (Nyl.) Schuler Syn.: Bacidia declinis, Bilimbia declinis, Lecidea declinis  
**picila** (A. Massal.) Coppins (McCune & Rosentreter 2014)  
**\*stereocaulorum** (Th. Fr.) H. Olivier (Zhurbenko 2010)  
**subnegans** (Nyl.) Boistel  
**subviridis** (Nyl.) Zahlbr.  
**terrena** (Willey) Zahlbr.  
arctica Lynge = Toninia philippea  
athallina (Hepp) Hellbom = Toninia athallina  
atropurpurea (Schaerer) Th. Fr. = Catinaria atropurpurea  
bahusiensis (Blomb.) Th. Fr. = Tylothallia biformigera  
biformigera (Leighton) H. Magn. = Tylothallia biformigera  
bouteillei (Desm.) Zahlbr. = Fellhanera bouteillei  
columbiana (G. Merr.) W. Noble = Megalaria columbiana  
crystallifera R. Kiliás = Toninia lutosa  
endochroma(Fée) Zahlbr. = Catillochroma endochroma  
franciscana (Tuck.) Herre = Lecania franciscana  
globulosa (Flörke) Th. Fr. = Biatora globulosa  
graniformis (K. G. Hagen) Vainio = Cliostomum corrugatum  
griffithii (Sm.) Malme = Cliostomum griffithii  
groenlandica Lynge = a Lecania sp.  
grossa (Pers. ex Nyl.) Körber = Megalaria grossa  
**\*heerii** (Hepp) H. Olivier = Scutula heerii  
**\*herrii** (Hepp) Fink (Fink 1935) Orthographic variant for C. heerii  
jemtlandica Th. Fr. & Almq. = Megalaria jemtlandica  
kansuensis H. Magn. = Toninia philippea  
laureri Hepp ex Th. Fr. = Megalaria laureri  
leptocheila (Tuck.) Riddle = Megalaria leptocheila  
micrococca (Körber) Th. Fr. = Micarea micrococca (Fryday & Coppins 2007)  
philippea (Mont.) A. Massal. = Toninia philippea (Thomson 1997)  
prasina (Fr.) Th. Fr. = Micarea prasina  
pulverea (Borrer) Lettau = Megalaria pulverea  
schaereri (Fr.) R. Sant. = Placocarpus schaeferi, but a misidentification for N.A. (McCune et al. 2014b)  
sculpturata H. Magn. = Toninia sculpturata  
sphaeroides (A. Massal.) Schuler = Mycobilimbia pilularis  
subnitida Hellbom = Toninia subnitida  
subnigrata (Nyl.) Blomb. & Forssell = a European species  
superflua (Müll. Arg.) Zahlbr. = ?Megalaria grossa (Printzen 1995)  
tricolor auct. = Cliostomum griffithii  
tristis (Müll. Arg.) Arnold = Toninia subnitida

**CATILLOCHROMA** Kalb (Kalb 2007)

**endochromum** (Fée) Kalb (Lücking et al. 2011b) Syn.: *Catillaria endochroma*  
*albocinctum* (Degel.) Kalb = *Megalaria albocincta* (Fryday & Lendemer 2010)  
*leptocheilum* (Tuck.) Kalb = *Megalaria leptocheila* (Fryday & Lendemer 2010)

**CATINARIA** Vainio

**atropurpurea** (Schaerer) Vězda & Poelt Syns.: *Biatora atropurpurea*, *Catillaria atropurpurea*  
**brodoana** R. C. Harris & W. R. Buck (Lendemer et al. 2016a)  
**radulae** R. C. Harris & W. R. Buck (Lendemer et al. 2016a)  
**subcorallina** (Zahlbr.) Brako Syn.: *Phyllopsora subcorallina*  
*albocincta* Degel. = *Megalaria albocincta*  
*grossa* (Pers. ex Nyl.) Vainio = *Megalaria grossa*  
*laureri* (Hepp ex Th. Fr.) Degel. = *Megalaria laureri*  
*leucoplaca* auct. = *Megalaria grossa*  
*versicolor* (Fée) Sipman = *Megalaria versicolor*

**CATOLECHIA** Flotow

**wahlenbergii** (Ach.) Körber Syns.: *Buellia wahlenbergii*, *B. pulchella*

**CAVERNULARIA** Degel. = **HYPOGYMNIA** (Miądlikowska et al. 2011)

*hultenii* Degel. = *Hypogymnia hultenii*  
*lophyrea* (Ach.) Degel. = *Hypogymnia lophyrea*

**CECIDONIA** Triebel & Rambold

\***umbonella** (Nyl.) Triebel & Rambold Syn.: *Lecidea umbonella*  
\***xenophana** (Körber) Triebel & Rambold (Hinds et al. 2002) Syn.: *Lecidea columnata* (Coppins & Fryday 2006b)

**CELIDIUM** Tul. = **ARTHONIA**

\**varians* Arnold = *Arthonia varians* (Hawksworth 2003)

**CELOTHELIUM** A. Massal. (Harris 1995a)

**aciculiferum** (Nyl.) Vainio (Harris 1995a)

**CEPHALOPHYSIS** (Hertel) H. Kilius

**leucospila** (Anzi) H. Kilius & Scheid. Syn.: *Lecidea ultima*

**CERCIDOSPORA** Körber

\***caudata** Kernst. (Navarro-Rosinés et al. 2004)  
\***cecidiiformans** Grube & Hafellner (Hafellner et al. 2002, Spribille et al. 2010)  
\***cladoniicola** Alstrup (Lendemer et al. 2008c)  
#**decolorella** (Nyl.) O. E. Erikss. & J. Z. Yue  
\***epicarphinea** (Nyl.) Grube & Hafellner  
\***epipolytropa** (Mudd) Arnold  
\***exiguella** (Nyl.) Arnold (Spribille et al. 2010)  
\***lobothalliae** Nav.-Ros. & Calat. (Navarro-Rosinés et al. 2004)  
\***macrospora** (Uloth) Hafellner & Nav.-Ros. (Navarro-Rosinés et al. 2004)  
\***ochrolechia** Zhurb. (Zhurbenko 2013)  
\***punctillata** (Nyl.) R. Sant. (Zhurbenko 2013)  
\***soror** Obermayer & Triebel (McCune & Ponzetti 2005)  
\***stereocaulorum** (Arnold) Hafellner (Alstrup & Cole 1998)  
\***thamnoliae** Zhurb. (Zhurbenko 2012)  
\***verrucosaria** (Lindsay) Arnold (Navarro-Rosinés et al. 2004)  
\***xanthoriae** (Wedd.) R. Sant. (Knudsen & Lendemer 2006)  
\**ulothii* Körber = *C. macrospora* (Navarro-Rosinés & Hafellner 2004)



**CEROTHALLIA** Arup, Frödén & Söchting (Arup et al. 2013)

**luteoalba** (Turner) Arup, Frödén & Söchting Syn.: *Caloplaca luteoalba*

**CETRADONIA** J.-C. Wei & Ahti (Wei & Ahti 2002)

**linearis** (Evans) J.-C. Wei & Ahti Syn.: *Gymnoderma linearis*, *Cladonia linearis*

**CETRARIA** Ach.

**aculeata** (Schreber) Fr. Syns.: *Coelocaulon aculeatum*, *Cornicularia aculeata*

**arenaria** Kärnefelt

**ericetorum** Opiz subsp. **ericetorum**

**ericetorum** subsp. **reticulata** (Räsänen) Kärnefelt

**islandica** (L.) Ach. subsp. **islandica**

**islandica** subsp. **crispiformis** (Räsänen) Kärnefelt

**islandica** subsp. **orientalis** (Asahina) Kärnefelt

**kamczatica** Savicz

**laevigata** Rass.

**muricata** (Ach.) Eckfeldt Syn.: *Coelocaulon muricatum*

**nigricans** Nyl.

**odontella** (Ach.) Ach. Syns.: *Cornicularia odontella*, *Coelocaulon odontellum*

**agnata** (Nyl.) Kristinsson = *Melanelia agnata*

**alaskana** W. L. Culb. & C. F. Culb. = *Cetrelia alaskana*

**andrejevii** Oxner = *Arctocetraria andrejevii*

**arborialis** (Zahlbr.) Howard = *Tuckermannopsis subalpina*

**atlantica** (Tuck.) Du Rietz = *Platismatia tuckermanii*

**aurescens** Tuck. = *Ahtiana aurescens*

**californica** Tuck. = *Kaernefeltia californica*

**canadensis** (Räsänen) Räsänen = *Vulpicida canadensis*

**chicita** W. L. Culb. = *Cetrelia chicitae*

**chlorophylla** (Willd.) Vainio = *Tuckermannopsis chlorophylla*

**chrysantha** Tuck. = *Asahinea chrysantha*

**ciliaris** Ach. = *Tuckermannopsis ciliaris*

**ciliaris** Ach. var. **halei** (W. L. Culb. & C. F. Culb.) Ahti = *Tuckermannopsis americana*

**commixta** (Nyl.) Th. Fr. = *Cetrariella commixta*

**coralligera** (W. A. Weber) Hale = *Tuckermanella coralligera*

**crispa** (Ach.) Nyl. = *C. ericetorum* subsp. *ericetorum*

**cucullata** (Bellardi) Ach. = *Flavocetraria cucullata*

**culbersonii** Hale = *Melanelia culbersonii*

**delisei** (Bory ex Schaerer) Nyl. = *Cetrariella delisei*

**elenkinii** Krog = *Arctocetraria nigricascens*

**fahlunensis** (L.) Schreber = *Cetrariella commixta*

**fastigiata** (Delise ex Nyl.) Kärnefelt = *Cetrariella fastigiata*

**fendleri** (Nyl.) Tuck. = *Tuckermanella fendleri*

**glauca** (L.) Ach. = *Platismatia glauca*

**halei** W. L. Culb. & C. F. Culb. = *Tuckermannopsis americana*

**hepatizon** (Ach.) Vainio = *Melanelia hepatizon*

**herrei** Imshaug = *Platismatia herrei*

**hiascens** (Fr.) Th. Fr. = *Cetrariella delisei*

**idahoensis** Essl. = *Esslingeriana idahoensis*

**inermis** (Nyl.) Krog = *Masonhalea inermis*

**juniperina** (L.) Ach. = Old North American records are *Vulpicida canadensis* or *V. viridis*

**juniperina** var. **jerseyi** Gyelnik (Gyelnik 1931) = *V. viridis*

**lacunosa** Ach. = *Platismatia lacunosa*

**lacunosa** Ach. var. **atlantica** Tuck. = *Platismatia tuckermanii*

**merrillii** Du Rietz = *Kaernefeltia merrillii*

**nigricascens** (Nyl.) Elenkin = *Arctocetraria nigricascens*

**nivalis** (L.) Ach. = *Flavocetraria nivalis*

norvegica (Lyng.) Du Rietz = *Platismatia norvegica*  
 oakesiana Tuck. = *Usnocetraria oakesiana*  
 orbata (Nyl.) Fink = *Tuckermannopsis orbata*  
 pallidula Tuck. ex Riddle = *Ahtiana pallidula*  
 pinastri (Scop.) Gray = *Vulpicida pinastri*  
 platyphylla Tuck. = *Tuckermannopsis platyphylla*  
 polyschiza (Nyl.) Jatta = *Melanelia hepatizon*  
 richardsonii Hooker = *Masonhalea richardsonii*  
 scholanderi Llano = *Asahinea scholanderi*  
 scutata (Wulfen) Poetsch = *Tuckermannopsis sepincola*  
 scutata auct. = *Tuckermannopsis chlorophylla*  
 sepincola (Ehrh.) Ach. = *Tuckermannopsis sepincola*  
 sibirica H. Magn. = *Arctocetraria nigricascens*  
 simmonsii Krog = *Arctocetraria andrejevii*  
 stenophylla (Tuck.) G. Merr. = *Platismatia stenophylla*  
 subalpina Imshaug = *Tuckermannopsis subalpina*  
 tilesii Ach. = *Vulpicida juniperina* (Saag et al. 2014)  
 tristis (Weber ex F. H. Wigg.) Fr. = *Cornicularia normoerica* (Santesson et al. 2004)  
 tuckermanii Oakes non Herre = *Platismatia tuckermanii*  
 tuckermanii Herre non Oakes = *Platismatia herrei*  
 viridis Schwein. = *Vulpicida viridis*  
 weberi Essl. = *Tuckermanella weberi*

CETRARIASTRUM Sipman = *HYPOTRACHYNA* (Divakar et al. 2013)  
 catawbiense (Degel.) W. L. Culb. & C. F. Culb. = *Hypotrachyna catawbiensis*

#### **CETRARIELLA** Kärnefelt & A. Thell

**commixta** (Nyl.) A. Thell & Kärnefelt (Thell et al. 2009) Syns.: *Cetraria commixta*, *C. fahlunensis*, *Melanelia commixta*  
**delisei** (Schaerer) Kärnefelt & A. Thell Syn.: *Cetraria delisei*, *C. hiascens*  
**fastigiata** (Nyl.) Kärnefelt & A. Thell Syn.: *Cetraria fastigiata*

#### **CETRELIA** W. L. Culb. & C. F. Culb.

**alaskana** (C. F. Culb. & W. L. Culb.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria alaskana*  
**cetrarioides** (Duby) W. L. Culb. & C. F. Culb.  
**chicita** (W. L. Culb.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria chicitae*  
**monachorum** (Zahlbr.) W. L. Culb. & C. F. Culb.  
**olivetorum** (Nyl.) W. L. Culb. & C. F. Culb. Syns.: *Parmelia olivetorum*, *P. olivaria*

#### **CHAENOTHECA** Th. Fr.

**balsamconensis** J. L. Allen & McMullin (Allen & McMullin 2015)  
**brachypoda** (Ach.) Tibell Syn.: *Coniocybe sulphurea*  
**brunneola** (Ach.) Müll. Arg.  
**chlorella** (Ach.) Müll. Arg.  
**chrysocephala** (Ach.) Th. Fr. Syn.: *Coniocybe gracilescens*  
**cinerea** (Pers.) Tibell  
**erkahomattiorum** Selva (Selva 2013)  
**ferruginea** (Turner ex Sm.) Mig.  
**floridana** R. C. Harris (Harris 1995a)  
**furfuracea** (L.) Tibell Syn.: *Coniocybe furfuracea*  
**gracilenta** (Ach.) J.-E. Mattsson & Middelb. Syn.: *Cybebe gracilenta* (Tibell 2001)  
**gracillima** (Vainio) Tibell Syn.: *Coniocybe gracillima*  
**hispidula** (Ach.) Zahlbr.  
**hygrophila** Tibell (Selva & Tibell 1999)  
**laevigata** Nádv.  
**nitidula** Tibell (Tibell & Koffman 2002)



**olivaceorufa** Vainio (Rikkinen 1998)  
**phaeocephala** (Turner) Th. Fr.  
**servitii** Nádv. (Selva & Tibell 1999)  
**sphaerocephala** Nádv. (Selva & Tibell 1999)  
**stemonea** (Ach.) Müll. Arg.  
**subroscida** (Eitner) Zahlbr.  
**trichialis** (Ach.) Th. Fr.  
**xyloxena** Nádv.  
 carthusiae (Harm.) Lettau = *C. chlorella*  
 melanophaea (Ach.) Zwackh = *C. ferruginea*  
 savonica (Räsänen) Tibell = *Chaenothecopsis savonica*  
 schaereri (De Not.) Zahlbr. = *C. cinerea*  
 sulphurea (Retz.) Middleborg & J.-E. Mattsson = *C. brachypoda*  
 trichialis var. cinerea (Pers.) Blomb. & Forssell = *C. cinerea*

#### **CHAENOTHECOPSIS Vainio**

**amurensis** Titov (Selva 2013)  
 \***arthoniae** Tibell (Dillman et al. 2012)  
 +**asperopoda** Titov (Selva & Tibell 1999)  
 \***australis** Tibell (Selva 2014)  
 \***brevipes** Tibell  
 \***consociata** (Nádv.) A.F.W. Schmidt  
 +**debilis** (Turner & Borrer ex Sm.) Tibell  
 +**diabolica** Rikkinen & Tuovila (Tuovila et al. 2011, 2012)  
 \***dibbleandersoniarum** Selva (Selva 2013)  
 +**dolichocephala** Titov (Selva 2010)  
 +**edbergii** Selva & Tibell (Selva & Tibell 1999)  
 \***epithallina** Tibell  
 +**exilis** Tibell (Selva & Tibell 1999)  
 +**fennica** (Laurila) Tibell (Selva 2014)  
 +**haematopus** Tibell (Selva & Tibell 1999)  
 +**irregularis** Titov (Selva & Tibell 1999)  
 \***kalbii** Tibell & K. Ryman (Lendemer et al. 2008c)  
 +**marcineae** Selva (Selva 2013)  
 +**montana** Rikkinen (Rikkinen 2003b)  
 +**nana** Tibell  
 \***nigra** Tibell (Harris & Lendemer 2005, Spribille & Björk 2008)  
 +**nigripunctata** Rikkinen (Rikkinen 2003a)  
 +**norstictica** R. C. Harris (Harris 1995a)  
 +**oregana** Rikkinen (Rikkinen 2003b, Tuovila et al., 2011, 2012)  
 \***ochroleuca** (Körber) Tibell & K. Ryman (Selva & Tibell 1999)  
 \***pilosa** Tibell & Kalb (Harris 1995a)  
 #**pusilla** (Ach.) A.F.W. Schmidt Syns.: *Calicium pusillum*, *C. floerkei*, *C. subpusillum*, *C. asikkalense*  
 #**pusiola** (Ach.) Vainio Syns.: *Calicium pusiolum*, *Mycocalicium pusiolum*  
 +**rappii** (Nádv.) R. C. Harris (Harris 1995a) Syn.: *Mycocalicium rappii*  
 +**resinicola** Tibell & Titov (Selva 2010)  
 +**rubescens** Vainio  
 \***rubina** Tibell (Peterson & Rikkinen 1999)  
 +**savonica** (Räsänen) Tibell Syns.: *Mycocalicium savonicum*, *Chaenotheca savonica*  
 +**sitchensis** Rikkinen (Rikkinen 1999)  
 \***subparoica** (Nyl.) Tibell (Peterson & Rikkinen 1999)  
 +**tasmanica** Tibell (Selva & Tibell 1999)  
 +**tsugae** Rikkinen (Rikkinen 1999)  
 +**ussuriensis** Titov (Peterson & Rikkinen 1999)  
 \***viridialba** (Kremp.) A.F.W. Schmidt  
 #**viridireagens** (Nádv.) A.F.W. Schmidt

- #lignicola (Nádv.) A.F.W. Schmidt = *C. pusiola*
- #subpusilla (Vainio) Tibell = *C. pusilla*
- +thujae Rikkinen (Selva & Tibell 1999) = *C. tsugae* (Selva 2010)
- +zebrina Rikkinen & Tuovila (Tuovila et al. 2011) = *C. oregana* (Tuovila et al. 2012)

#### **CHALARA** (Corda) P. A. Saccardo

- \***lobariae** Etayo (Zhurbenko & Dillman 2010)

#### **CHAPSA** A. Massal. (Frisch 2006)

- alborosella** (Nyl.) A. Frisch Syns.: *Ocellularia alborosella*, *Thelotrema alborosellum* (Frisch 2006)
- chionostoma** (Nyl.) Rivas Plata & Mangold (Lücking et al. 2011b)
- leprocarpa** (Nyl.) A. Frisch Syns.: *Graphina leptocarpa*, *Thelotrema leptocarpum* (Frisch 2006)
- platycarpa** (Tuck.) A. Frisch Syns.: *Thelotrema platycarpoides*, *T. platycarpum* (Frisch 2006)
- platycarpoides** (Tuck.) Breuss & Lücking (Lücking et al. 2011b)
- subpatens** (Hale) Mangold (Lücking et al. 2011b)

#### **CHEIROMYCINA** B. Sutton

- flabelliformis** B. Sutton (Tønsberg 2002)

#### **CHIODECTON** Ach.

- malmei** Thor
- ochroleucum* Zahlbr. = *Paraschismatomma ochroleucum* (Ertz & Tehler 2011)
- californicum* Tuck. = *Schizopelte crustosa* (Ertz & Tehler 2011)
- inscriptum* (Nyl.) Fink = *Sclerophyton inscriptum*
- montagnaei* auct. N.A. = *Cryptothecia striata*
- perplexum* Nyl. = *Syncesia graphica* (Tehler 1996)
- rubrocinctum* (Ehrenb. : Fr.) Nyl. = *Herpothallon rubrocinctum*
- sanguineum* (Sw.) Vainio = *Herpothallon rubrocinctum*
- sphaerale* Ach. = misidentification for North America (Harris 1995a)
- subochroleucum* Fink = *Dendrographa franciscana* (Kocourková et al. 2010; Ertz & Tehler 2011)

#### **CHIONOSPHERA** Cox

- \**apobasidialis* Cox (According to Diederich [1996, and pers. comm.], only non-lichenicolous specimens are known for North America, and the lichenicolous specimens from Europe may represent a distinct species.)

#### **CHRISMOFULVEA** Marbach

- dialyta** (Nyl.) Marbach Syn.: *Buellia dialyta* (Marbach 2000)
- pinastri** (Erichsen) Marbach Syn.: *Buellia pinastri* (Marbach 2000)
- rubifaciens** (R. C. Harris) Marbach Syn.: *Buellia rubifaciens* (Marbach 2000)

#### **CHROMATOCHLAMYS** Trevisan = **THELENELLA** Nyl.

- muscorum* (Fr.) H. Mayrhofer & Poelt var. *muscorum* = *Thelenella muscorum*
- muscorum* var. *octospora* (Nyl.) H. Mayrhofer & Poelt = *Thelenella muscorum* var. *octosporum*

#### **CHRYSOPSORA** M. Choisy

- testacea* (Hoffm.) M. Choisy = *Protoblastenia testacea*, but not in North American flora.

#### **CHRYSOTHRIX** Mont.

- caesia** (Flotow) Ertz & Tehler (Ertz & Tehler 2011) Syns.: *Allarthonia caesia*, *Arthonia caesia*, *A. lecideella*
- candelaris** (L.) J. R. Laundon Syns.: *Lepraria candelaris*, *L. flava*, *L. citrina* sens. lat.
- chamaecyparicola** Lendemer (Lendemer & Elix 2010)
- chlorina** (Ach.) J. R. Laundon Syn.: *Lepraria chlorina*
- chrysophthalma** (P. James) P. James & J. R. Laundon (Tønsberg 2002)
- granulosa** G. Thor (Tønsberg 2004a)



**insulizans** R. C. Harris & Ladd (Harris & Ladd 2008)  
**onokoensis** (Wolle) R. C. Harris & Ladd (Harris & Ladd 2008)  
**susquehannensis** Lendemer & Elix (Lendemer & Elix 2010)  
**xanthina** (Vainio) Kalb (Harris & Ladd 2008)  
flavovirens Tønsberg (Harris & Lendemer 2005) North American report is *C. chamaecyparicola*

#### **CIPOSIA** Marbach

**wheeleri** (R. C. Harris) Marbach Syn.: *Buellia wheeleri* (Marbach 2000)

#### **CIRCINARIA** Link (Nordin et al. 2010)

**arida** Owe-Larsson, A. Nordin & Tibell (Owe-Larsson et al. 2011) Syns.: *Aspicilia desertorum*, *Lecanora desertorum* (American reports only)  
**caesiocinerea** (Nyl. ex Malbr.) A. Nordin, Savić & Tibell Syns.: *Aspicilia caesiocinerea*, *Lecanora caesiocinerea*  
**calcarea** (L.) A. Nordin, Savić & Tibell Syns.: *Aspicilia calcarea*, *Lecanora calcarea*  
**contorta** (Hoffm.) A. Nordin, Savić & Tibell Syns.: *Aspicilia contorta*, *Lecanora contorta*  
**elmorei** (E. D. Rudolph) Owe-Larsson, A. Nordin & M. Sohrabi (Owe-Larsson et al. 2011) Syn.: *Lecanora elmorei*  
**gibbosa** (Ach.) A. Nordin, Savić & Tibell Syns.: *Aspicilia gibbosa*, *Lecanora gibbosa*, *L. gibbosula*  
**hispida** (Mereschk.) A. Nordin, Savić & Tibell Syns.: *Agrestia hispida*, *A. cyphellata*, *Aspicilia hispida*  
**leproscens** (Sandst.) A. Nordin, Savić & Tibell Syn.: *Aspicilia leproscens*  
**rogeri** (Sohrabi) Sohrabi (Sohrabi et al. 2013b) Syn.: *Aspicilia rogeri*

#### **CLADIDIUM** Hafellner

**bolanderi** (Tuck.) B. D. Ryan Syns: *Lecanora thamnitis*, *L. bolanderi*  
*thamnitis* (Tuck.) Hafellner = *C. bolanderi*

#### **CLADINA** Nyl. = **CLADONIA** (Ahti & DePriest 2001)

*aberrans* (Abbeyes) Hale & W. L. Culb. = *Cladonia stellaris*  
*alpestris* (L.) Nyl. = *Cladonia stellaris*  
*arbuscula* (Wallr.) Hale & W. L. Culb. = *Cladonia arbuscula*  
*arbuscula* subsp. *beringiana* (Ahti) N. S. Golubk. = *Cladonia arbuscula* subsp. *beringiana*  
*beringiana* (Ahti) Trass = *Cladonia arbuscula* subsp. *beringiana*  
*ciliata* (Stirton) Trass var. *ciliata* = *Cladonia ciliata* var. *ciliata*  
*ciliata* var. *tenuis* (Flörke) Ahti & M. J. Lai = *Cladonia ciliata* var. *tenuis*  
*conspicua* Ahti = *Cladonia conspicua*  
*evansii* (Abbeyes) Hale & W. L. Culb. = *Cladonia evansii*  
*impexa* B. de Lesd. = *Cladonia portentosa*  
*leucophaea* (Abbeyes) Hale & W. L. Culb. = *Cladonia ciliata* var. *ciliata*  
*mitis* (Sandst.) Mong. = *Cladonia arbuscula* subsp. *mitis*  
*pacifica* (Ahti) Hale & W. L. Culb. = *Cladonia portentosa* subsp. *pacifica*  
*portentosa* (Dufour) Follmann = *Cladonia portentosa*  
*portentosa* subsp. *pacifica* (Ahti) Ahti = *Cladonia portentosa* subsp. *pacifica*  
*portentosa* subsp. *pacifica* f. *decolorans* (Ahti) Ahti = *Cladonia portentosa* subsp. *pacifica* f. *decolorans*  
*pseudoëvansii* (Asahina) Hale & W. L. Culb. = *Cladonia pseudoëvansii*  
*rangiferina* (L.) Nyl. = *Cladonia rangiferina*  
*sandstedei* (Abbeyes) Ahti = *Cladonia sandstedei*  
*stellaris* (Opiz) Brodo = *Cladonia stellaris*  
*stellaris* var. *aberrans* (Abbeyes) Ahti = *Cladonia stellaris*  
*stygia* (Fr.) Ahti = *Cladonia stygia*  
*submitis* (A. Evans) Hale & W. L. Culb. = *Cladonia submitis*  
*subtenuis* (Abbeyes) Hale & W. L. Culb. = *Cladonia subtenuis*  
*subtenuis* f. *cinerea* (Ahti) Ahti = *Cladonia subtenuis* f. *cinerea*  
*tenuis* (Flörke) B. de Lesd. = *Cladonia ciliata* var. *tenuis*  
*terrae-novae* (Ahti) Hale & W. L. Culb. = *Cladonia terrae-novae*

**CLADONIA** P. Browne

- abbreviatula** G. Merr.  
**acuminans** R. C. Harris (Harris 2009)  
**acuminata** (Ach.) Norrlin  
**alaskana** A. Evans  
**albonigra** Brodo & Ahti (Brodo & Ahti 1996)  
**alinii** Trass ([Ahti 1980](#))  
**amaurocraea** (Flörke) Schaerer  
**andereggii** S. Hammer  
**anita** W. L. Culb. & C. F. Culb.  
**apodocarpa** Robbins  
**appalachensis** Yoshim. & Sharp ex Lendemer & R. C. Harris (Lendemer & Harris 2013b)  
**arbuscula** (Wallr.) Flotow subsp. **arbuscula** Syn.: *Cladina arbuscula*  
**arbuscula** subsp. **beringiana** Ahti Syn.: *Cladina arbuscula* subsp. *beringiana*  
**arbuscula** subsp. **mitis** (Sandst.) Ruoss Syn.: *Cladina mitis* (Piercey-Normore 2010)  
**artuata** S. Hammer  
**asahinae** J. W. Thomson  
**atlantica** A. Evans  
**bacilliformis** (Nyl.) Sarnth.  
**beaumontii** (Tuck.) Vainio  
**bellidiflora** (Ach.) Schaerer  
**borealis** S. Stenroos  
**boryi** Tuck.  
**botryocarpa** G. Merr.  
**botrytes** (K. G. Hagen) Willd.  
**brevis** (Sandst.) Sandst.  
**buckii** R. C. Harris  
**caespiticia** (Pers.) Flörke  
**cariosa** (Ach.) Sprengel  
**carneola** (Fr.) Fr.  
**caroliniana** Tuck. Syn.: *Pycnothelia cladinoidea*  
**cenotea** (Ach.) Schaerer  
**cervicornis** (Ach.) Flotow subsp. **cervicornis**  
**chlorophaea** (Flörke ex Sommerf.) Sprengel  
**ciliata** Stirton Syn.: *Cladina ciliata*  
**ciliata** var. **tenuis** (Flörke) Ahti Syn.: *Cladina ciliata* var. *tenuis*  
**cinerella** Ahti (Ahti 2000, Seavey 2010[2011])  
**coccifera** (L.) Willd.  
**concinna** Ahti & Goward (Ahti 2007)  
**coniocraea** (Flörke) Sprengel  
**conista** (Nyl.) Robbins (Pino-Bodas et al. 2012)  
**conspicua** (Ahti) Ahti Syn.: *Cladina conspicua*  
**cornuta** (L.) Hoffm. subsp. **cornuta**  
**cornuta** subsp. **groenlandica** (E. Dahl) Ahti  
**crispata** (Ach.) Flotow var. **crispata**  
**crispata** var. **cetrariiformis** (Delise) Vainio  
**cristatella** Tuck.  
**cryptochlorophaea** Asahina  
**cyanipes** (Sommerf.) Nyl.  
**cylindrica** (A. Evans) A. Evans  
**dactylota** Tuck.  
**dahlia** Kristinsson  
**decorticata** (Flörke) Sprengel  
**deformis** (L.) Hoffm.  
**didyma** (Fée) Vainio  
**didyma** var. **vulcanica** (Zoll. & Moritzi) Vainio



**digitata** (L.) Hoffm.  
**dimorpha** S. Hammer  
**dimorphoclada** Robbins  
**ecmocyna** Leighton subsp. **ecmocyna**  
**ecmocyna** subsp. **intermedia** (Robbins) Ahti  
**ecmocyna** subsp. **occidentalis** Ahti (Brodo & Ahti 1996)  
**evansii** Abbayes Syn.: *Cladina evansii*  
**extracorticata** S. Hammer  
**farinacea** (Vainio) A. Evans  
**fimbriata** (L.) Fr.  
**firma** (Nyl.) Nyl.  
**floerkeana** (Fr.) Flörke  
**floridana** Vainio  
**furcata** (Hudson) Schrader  
**glauc**a Flörke  
**gracilis** (L.) Willd. subsp. **gracilis**  
**gracilis** subsp. **elongata** (Jacq.) Vainio  
**gracilis** subsp. **turbinata** (Ach.) Ahti  
**gracilis** subsp. **vulnerata** Ahti  
**granulans** Vainio  
**grayi** G. Merr. ex Sandst.  
**homosekikaica** Nuno  
**humilis** (With.) J. R. Laundon  
**hypoxantha** Tuck.  
**imbricarica** Kristinsson  
**incrassata** Flörke  
**jakutica** Ahti (McCune et al. 2009)  
**jaliscana** Ahti & Guzm.-Dáv. (Ahti & Hammer 2002)  
**kanewskii** Oxner  
**labradorica** Ahti & Brodo  
**lacryma** S. Hammer (Hammer 2001)  
**leporina** Fr.  
**libifera** Savicz (McCune et al. 2009; Hansen & Ahti 2011)  
**luteoalba** Wheldon & A. Wilson  
**macilenta** Hoffm.  
**macilenta** var. **bacillaris** (Ach.) Schaerer  
**macroceras** (Delise) Ahti  
**macrophylla** (Schaerer) Stenh.  
**macrophyllodes** Nyl.  
**magyarica** Vainio  
**maritima** K. Knudsen & Lendemer (Knudsen & Lendemer 2009a)  
**mateocyatha** Robbins  
**maxima** (Asahina) Ahti  
**merochlorophaea** Asahina  
**monomorpha** Aptroot, Sipman & van Herk (Kowalewska et al. 2008)  
**multiformis** G. Merr.  
**nana** Vainio  
**nashii** Ahti (Ahti & Hammer 2002)  
**nipponica** Asahina  
**nitens** Ahti (Ahti 2007)  
**norvegica** Tønsberg & Holien  
**novochlorophaea** (Sipman) Brodo & Ahti (Brodo & Ahti 1996)  
**ochrochlora** Flörke  
**oricola** Ahti & S. Stenroos (Ahti & Stenroos 2008)  
**pachycladodes** Vainio  
**parasitica** (Hoffm.) Hoffm.

**perforata** A. Evans  
**perlomera** Kristinsson  
**petrophila** R. C. Harris  
**peziziformis** (With.) J. R. Laundon  
**phyllophora** Hoffm.  
**piedmontensis** G. Merr.  
**pleurota** (Flörke) Schaerer  
**pocillum** (Ach.) O. J. Rich.  
**poroscypha** S. Hammer  
**portentosa** (Dufour) Coem. Syn.: *Cladina portentosa*  
**portentosa** subsp. **pacifica** (Ahti) Ahti Syn.: *Cladina portentosa* subsp. *pacifica*  
**portentosa** subsp. **pacifica** f. **decolorans** Ahti Syn.: *Cladina portentosa* subsp. *pacifica* f. *decolorans*  
**prolifera** Ahti & S. Hammer  
**prostrata** A. Evans  
**pseudalcicornis** Asahina (Ahti 2007)  
**pseudoëvansii** Asahina Syn.: *Cladina pseudoëvansii*  
**pulvinella** S. Hammer  
**pyxidata** (L.) Hoffm.  
**ramulosa** (With.) J. R. Laundon  
**rangiferina** (L.) F. H. Wigg. Syn.: *Cladina rangiferina*  
**rappii** A. Evans  
**ravenelii** Tuck.  
**rei** Schaerer (Syrek & Kukwa 2008, Dolnik et al. 2010, Pino-Bodas et al. 2010)  
**robbinsii** A. Evans  
**sandstedei** Abbayes Syn.: *Cladina sandstedei*  
**santensis** Tuck.  
**scabriuscula** (Delise) Nyl.  
**scotteri** Ahti & E. S. Hansen (Hansen & Ahti 2011)  
**simulata** Robbins  
**singularis** S. Hammer  
**squamosa** (Scop.) Hoffm.  
**squamosa** var. **subsquamosa** (Nyl. ex Leighton) Vainio  
**stellaris** (Opiz) Pouzar & Vězda Syn.: *Cladina stellaris*  
**stipitata** Lendemer & Hodkinson (Lendemer & Hodkinson 2009)  
**straminea** (Sommerf.) Flörke (Timdal & Tønsberg 2012)  
**strepsilis** (Ach.) Grognot  
**stricta** (Nyl.) Nyl.  
**stygia** (Fr.) Ruoss Syn.: *Cladina stygia*  
**subcariosa** Nyl. (Ahti 2000)  
**subfimbriata** Ahti (Ahti & Hammer 2002)  
**subfurcata** (Nyl.) Arnold  
**submitis** A. Evans Syn.: *Cladina submitis*  
**subradiata** (Vainio) Sandst.  
**subsetacea** Robbins ex A. Evans  
**subsquamosa** Kremp.  
**subtenuis** (Abbayes) Mattick Syn.: *Cladina subtenuis*  
**subtenuis** f. **cinerea** Ahti Syn.: *Cladina subtenuis* f. *cinerea*  
**subulata** (L.) F. H. Wigg.  
**sulphurina** (Michaux) Fr.  
**symphy carpia** (Flörke) Fr. (Ahti 2000, Hansen & Ahti 2011)  
**terrae-novae** Ahti Syn.: *Cladina terrae-novae*  
**thiersii** S. Hammer  
**thomsonii** Ahti  
**transcendens** (Vainio) Vainio  
**trassii** Ahti (Ahti 1998)  
**turgida** Ehrh. ex Hoffm.



**uliginosa** (Ahti) Ahti (Ahti 1998)  
**umbricola** Tønsberg & Ahti  
**uncialis** (L.) F. H. Wigg. [subsp. \*\*uncialis\*\* \(Stenroos et al. 2015\)](#)  
**uncialis** [subsp. \*\*biuncialis\*\* \(Hoffm.\) M. Choisy \(Stenroos et al. 2015\)](#)  
**verruculosa** (Vainio) Ahti  
**verticillata** (Hoffm.) Schaerer (Ahti, in litt.)  
**wainioi** Savicz  
aberrans (Abbayes) Stuckenb. = *Cladonia stellaris*  
acuminata var. norrlinii (Vainio) Lynge = *C. acuminata*  
alpestris (L.) Rabenh. = *C. stellaris*  
alpestris f. aberrans Abbayes = *C. stellaris*  
alpicola (Flotow) Vainio = *C. macrophylla*  
anomaea (Ach.) Ahti & P. James = *C. ramulosa*  
bacillaris (Ach.) Genth = *C. macilenta* var. *bacillaris*  
balfourii auct. = *C. subradiata*  
balfourii Crombie = *C. macilenta*  
blakei Robbins = *C. coccifera*  
borbonica (Delise) Nyl. North American reports are *C. cylindrica* (Evans 1950)  
[botryoides \(Tuck.\) Vainio = \*C. squamosa\* \(Ahti et al. 2016\)](#)  
calycantha Delise ex Nyl. = *C. rappii* for North American records.  
capitata (Michaux) Sprengel = *C. peziziformis*  
carassensis Vainio = misidentification for North America  
cerasphora Vainio (Fink 1935) = *C. stricta* (Ahti 1998)  
cerasphora auct. = *C. trassii* (Ahti, in litt.)  
cervicornis subsp. verticillata (Hoffm.) Ahti = *Cladonia verticillata* (Ahti, in litt.)  
cetrarioides Schwein. ex Tuck. (Fink 1935) = *C. leporina* (Lendemer & Hewitt 2002)  
cladinoides (Nyl.) Zahlbr. = *Cladonia caroliniana*  
clavulifera Vainio = *C. subcariosa* (Ahti 2000)  
conistea auct. = *C. humilis*  
conoidea Ahti = *C. humilis*  
cornucopioides auct. (Mohr 1901) = *C. coccifera*  
cornutoradiata (Leighton) Sandst. = *C. subulata*  
corymbosula Nyl. (Fink 1935) Apparent misidentification for North America (Esslinger & Tucker 2009)  
[crinita Bertol. = \*C. evansii\* \(Ahti et al. 2016\)](#)  
cyathomorpha «(Evans) Evans» (Qian & Klinka 1998) = misidentification for North America  
degenerans (Flörke) Sprengel = *C. phyllophora*  
delessertii Vainio = *C. subfurcata*  
delicata auct. = *C. parasitica*  
diversa Asperges (Lendemer 2006) = misidentification for North America (Ahti, in litt.)  
elongata auct. non (Jacq.) Hoffm. = misidentification for North America, possibly *C. macroceras* or *C. maxima*,  
elongata (Jacq.) Hoffm. = *C. gracilis* var. *elongata*  
endoxantha Vainio (Fink 1935) = *C. hypoxantha* (Thomson 1967)  
exasperatula G. Merr. (Fink 1935) = *C. beaumontii* (Tuck.) Vainio (Thomson 1967)  
flabelliformis Vainio = *C. polydactyla*  
flavescens Vainio = misidentification for North America  
foliacea (Hudson) Willd. = misidentification for North America  
furcata subsp. subrangiformis auct. N. Am. = *C. furcata* (Ahti, in litt.)  
gonecha (Ach.) Asahina = *C. sulphurina*  
gracilescens auct. = *C. stricta*  
graciliformis Zahlbr. North American reports are errors, mostly representing *C. bellidiflora* (Dillman et al. 2012)  
gracilis subsp. nigripes (Nyl.) Ahti = *C. gracilis* subsp. *elongata*  
hammeri Ahti (Ahti & Hammer 2002) = *C. pulvinella* (Pino-Bodas et al. 2013)  
herrei Fink ex J. Hedrick = *C. furcata*

heteromorpha G. Merr. (Fink 1935) = *Pycnothelia papillaria* (Laundon 1986)  
hookeri Tuck. = *C. bellidiflora*  
hookeri sensu J. W. Thomson = *C. graciliformis*  
humilis var. bourgeanica A.W. Archer = *C. conista*  
innominata Lendemer (Lendemer 2008) = *C. conista* (Pino-Bodas et al. 2012)  
invisa Robbins = *C. ochrochlora*  
japonica Vainio = *C. crispata*  
lepidota auct. = *C. trassii* (Ahti, in litt.)  
leptothallina G. Merr. = *C. peziziformis*  
linearis A. Evans = *Cetradonia linearis*  
macroptera Räsänen = *C. scabriuscula* (fide T. Ahti)  
major (K. G. Hagen) Sandst. = *C. fimbriata*  
merochlorophaea var. novochlorophaea Sipman = *C. novochlorophaea*  
metacorallifera Asahina = *C. straminea* (Timdal & Tønsberg 2012)  
microphylliza G. Merr. (Fink 1935) = *C. beaumontii* (Thomson 1967)  
mitis Sandst. = *Cladonia arbuscula* subsp. *mitis*  
mitrula Tuck. = *C. peziziformis*  
nanodes Robbins ex Sandst. = nom. invalid., identity uncertain  
nemoxyna (Ach.) Arnold = *C. rei*  
norrlinii Vainio = *C. acuminata* var. *acuminata*  
palamaea (Ach.) Fink (Fink 1935) = *C. furcata* (Thomson 1967)  
paludicola (Tuck.) G. Merr. (Fink 1935) = *incrassata* (Thomson 1967)  
papillaria (Ehrh.) Hoffm. = *Pycnothelia papillaria*  
pityrea (Flörke) Fr. = *C. ramulosa*  
polycarpia G. Merr. = *C. subcariosa* (Ahti 2000)  
polycarpoides Nyl. = *C. subcariosa* (Ahti 2000)  
polydactyla (Flörke) Sprengel = misidentification for North America, mostly refers to *C. umbricola* (fide T. Ahti)  
pseudodigitata Gyelnik = *C. coccifera*  
pseudohondoensis Asahina = misidentification for North America  
pseudomacilenta Asahina = misidentification for North America  
pseudorangiformis Asahina = *C. wainioi*  

[pseudostellata Asahina \(Spribille et al. 2010\) = \*C. uncialis\* subsp. \*uncialis\* \(Stenroos et al. 2015\)](#)

psoromica J. P. Dey = *C. dimorphoclada* Robbins (Ahti 2000)  
pulchella Schwein. (Mohr 1901) = *C. didyma*  
pyncoclada (Gaudich.) Nyl. = misidentification for North America (Ahti 1961)  
rangiformis Hoffm. = not in North America  
rappii var. exilior (Abbayes) Ahti = *C. rappii* var. *rappii*  
reticulata (Russell) Vainio (Fink 1935) = *C. boryi* (Thomson 1967)  
schofieldii Ahti & Brodo (Brodo & Ahti 1996) = *C. pseudalcicornis*  
sobolescens Nyl. ex Vainio = *C. subcariosa* (Ahti 2000)  
stellaris var. aberrans (Abbayes) ined. = *C. stellaris* (Ahti, in litt.)  
stenophyllodes Vainio (Fink 1935) = misidentification for North America  
stricta var. uliginosa Ahti = *C. uliginosa*  
subapodocarpa Harris, nomen nudum (Hale 1979) = *Cladonia petrophila*  
subcervicornis (Vainio) Kernst. = misidentification for North America  
subclavulifera Asahina = *C. subcariosa* (Ahti 2000)  
subrangiformis auct. N. Am. = *C. furcata*  
subsquamosa (Nyl. ex Leighton) Crombie nom. illeg. = *C. squamosa* var. *subsquamosa*  
subsubulata Nyl. = misidentification for North America  
sylvatica nom. utique rej. s. auct. = *C. arbuscula* subsp. *arbuscula* (Ahti, in litt.)  
theiophila Asahina = *C. vulcani*, but not present in North America  
vulcani Savicz = misidentification for North America  
vulcanica Zoll. & Moritzi = *C. didyma* var. *vulcanica*  
yunnana (Vainio) Abbayes ex J. C. Wei & Y. M. Jiang = misidentification for North America



**CLADOPHIALOPHORA** Borelli (Diederich et al. 2013)

\***megalosporae** Diederich (Diederich et al. 2013)

\***parmeliae** Etayo & Diederich (Kocourková & Knudsen 2009d) Syn.: *Sclerococcum parmeliae*

**CLATHROPORINA** Müll. Arg.

**isidiifera** R. C. Harris (Harris 1995a)

**subpungens** (Malme) R. C. Harris (Harris 1995a)

**tetracerae** (Ach.) R. C. Harris (Harris 1995a)

<sup>+</sup>**amygdalina** sensu Fink = *Julella sublactea* (Harris 1995a).

**confinis** Müll. Arg. = *Porina nuculastrum* (Harris 1995a)

**diphloea** Zahlbr. = *Laurera megasperma*

<sup>+</sup>**exiguella** Zahlbr. = *Julella sublactea* (Harris 1995a)

**nuculastrum** Müll. Arg. = *Porina nuculastrum* (Harris 1995a)

**CLAUROUXIA** D. Hawksw.

**chalybeioides** (Nyl.) D. Hawksw. (Fyday 2010)

**CLAUZADEA** Hafellner & Bellem.

**chondrodes** (A. Massal.) Clauzade & Cl. Roux (Lendemer et al. 2013)

**immersa** (Hoffm.) Hafellner & Bellem. Syn.: *Lecidea calcivora*

**metzleri** (Körber) Clauzade & Cl. Roux ex D. Hawksw. (Hansen 2003)

**monticola** (Ach.) Hafellner & Bellem. Syns.: *Lecidea monticola*, *L. fuscorubens*, *Protoblastenia monticola*

**CLAUZADEANA** Cl. Roux

**macula** (Taylor) Coppins & Rambold (Hertel 1991) Syn.: *Lecanora morioides*

**CLAVASCIDIUM** Breuss (Breuss 1996)

**lacinulatum** (Ach.) M. Prieto var. **lacinulatum** (Prieto et al. 2012) Syns.: *Catapyrenium lacinulatum*, *Placidium lacinulatum*

**lacinulatum** var. **atrans** (Breuss) M. Prieto (Prieto et al. 2012)

**lacinulatum** var. **erythrostrum** (Breuss) M. Prieto (Prieto et al. 2012)

**umbrinum** (Breuss) Breuss Syn.: *Placidium umbrinum* (Prieto et al. 2012)

**CLIOSTOMUM** Fr.

**corrugatum** (Ach.: Fr.) Fr. Syn.: *Catillaria graniformis*

**flavidulum** Hafellner & Kalb (Tønsberg 1997)

**griffithii** (Sm.) Coppins Syns.: *Catillaria griffithii*, *C. tricolor* auct.

**leprosum** (Räsänen) Holien & Tønsberg

**tenerum** (Nyl.) Coppins & S. Ekman (Ekman 1997) Syns.: *Lecania tenera*, *Lecanora tenera*

**vitellinum** Gowan

**graniforme** (K. G. Hagen) Coppins = *C. corrugatum*

**luteolum** Gowan = *C. leprosum*

**pallens** (Kullhem) S. Ekman = *Biatora pallens*

**CLYPEOCOCCUM** D. Hawksw.

\***bisporum** Zhurb. (Zhurbenko 2009b)

\***grossum** (Körber) D. Hawksw.

\***hypocenomycis** D. Hawksw.

\***epicrassum** (H. Olivier) Hafellner & Nav.-Ros. According to Hawksworth (1986), our records probably based on *Polycoccum squamarioides*

**COCCOCARPIA** Pers.

**domingensis** Vainio

**erythroxyli** (Sprengel) Swinscow & Krog

**filiformis** Arv. (Kaminsky et al. 2013)

**palmicola** (Sprengel) Arv. & D. J. Galloway  
**pellita** (Ach.) Müll. Arg. (Kaminsky et al. 2013) Syn.: *Pannaria molybdaea*  
**prostrata** Lücking, Aptroot & Sipman (Lücking et al. 2007)  
**stellata** Tuck. Syns.: *Pannaria stellata*, *Parmeliella stellata*  
 asterella (Nyl.) Vainio = *C. stellata*  
 cronia (Tuck.) Vainio = *C. palmicola*  
 incisa Pers. = *C. erythroxyli*  
 molybdaea Pers. = *C. pellita*  
 parmelioides (Hooker) Tuck. ex M. A. Curtis = *C. erythroxyli*

#### **COCCOTREMA** Müll. Arg.

**hahriae** T. Sprib. & Tønsberg (Spribille et al. 2010)  
**maritimum** Brodo  
**minutum** (Degel.) R. Sant. (Spribille et al. 2010)  
**pocillarium** (Cummings) Brodo Syns.: *Ochrolechia pacifica*, *Perforaria minuta*

#### **COELOCAULON** Link

aculeatum (Schreber) Link = *Cetraria aculeata*  
 divergens (Ach.) R. Howe = *Bryocaulon divergens*  
 muricatum (Ach.) J. R. Laundon = *Cetraria muricata*  
 odontellum (Ach.) R. Howe = *Cetraria odontella*

#### **COENOGONIUM** Ehrenb.

**congensis** C. W. Dodge (Lücking et al. 2011b)  
**disjunctum** Nyl.  
**geralense** (P. Henn) Lücking (Lücking et al. 2011b)  
**implexum** Nyl.  
**interplexum** Nyl.  
**interpositum** Nyl.  
**isidiatum** (G. Thor & Vězda) Lücking, Aptroot & Sipman (Seavey & Seavey 2014a)  
**isidiiferum** (Lücking) Lücking (Seavey & Seavey 2014a)  
**isidiigerum** (Vězda & Osorio) Lücking, Aptroot & Sipman (Seavey & Seavey 2012)  
**isidiosum** (Breuss) Rivas Plata, Lücking, Umaña & Chavez (Seavey & Seavey 2012)  
**linkii** Ehrenb.  
**luteocitrinum** Rivas Plata, Lücking & Umaña (Lücking et al. 2011b)  
**lutescens** (Vězda & Malcolm) Malcolm (Seavey et al. 2014)  
**luteum** (Dicks.) Kalb & Lücking Syn.: *Dimerella lutea* (Lücking & Kalb 2000), *Gyalecta lutea*, *Microphiale lutea*  
**missouriense** J. Davis  
**moniliforme** Tuck.  
**nepalense** (G. Thor & Vězda) Lücking (Seavey & Seavey 2014a)  
**pineti** (Ach.) Lücking & Lumbsch (Lücking, Stuart & Lumbsch 2004) Syns. *Dimerella pineti*, *D. diluta*, *Microphiale diluta*  
**pusillum** (Mont.) Lücking, Aptroot & Sipman (Seavey et al. 2014)  
**roumeguerianum** (Müll. Arg.) Kalb (Seavey et al. 2014)  
**stenosporum** (Malme) Lücking, Aptroot & Sipman (Seavey et al. 2014)  
**subdentatum** (Vězda & G. Thor) Rivas Plata, Lücking, Umaña & Chavez (Lücking et al. 2011b)  
**subdilutum** (Malme) Lücking, Aptroot & Sipman (Seavey & Seavey 2014a)  
**subfallaciosum** (Vězda & Farkas) Lücking, Aptroot & Sipman (Lücking et al. 2011b)

#### **COLLEMA** F. H. Wigg.

**coniophilum** Goward (Spribille et al. 2009)  
**curtisporum** Degel.  
**flaccidum** (Ach.) Ach. Syn.: *Synechoblastus rupestris*  
**furfuraceum** (Arnold) Du Rietz  
**furfuraceum** var. **luzonense** (Räsänen) Degel.



**glebulentum** (Nyl. ex Crombie) Degel.  
**leptaleum** Tuck. Syn.: *Synechoblastus leptaleus*, *S. microptychius*  
**nigrescens** (Hudson) DC. Syn.: *Synechoblastus nigrescens*  
**pulchellum** Ach. Syn.: *Leptogium pulchellum*  
**pulchellum** var. **leucopeplum** (Tuck.) Degel.  
**pulchellum** var. **subnigrescens** (Müll. Arg.) Degel.  
**pustulatum** Ach.  
**ryssoleum** (Tuck.) A. Schneider Syn.: *Synechoblastus ryssoleus*  
**subflaccidum** Degel.  
**subnigrescens** Degel.  
**subparvum** Degel.  
**texanum** Tuck. Syn.: *Synechoblastus texanus*, *S. laciniatus*  
**thamnoides** Riddle  
 apalachense Tuck. = *Scytinium apalachense* (Otálora et al. 2014)  
 arcticum Lynge = *Rostania ceranisca*  
 aggregatum (Ach.) Röhl = *Gabura fasciculare*  
 auriculatum Hoffm. = *Lathagrium auriforme*  
 auriforme (With.) Coppins & J. R. Laundon = *Lathagrium auriforme* (Otálora et al. 2014)  
 bachmanianum (Fink) Degel. = *Enchylium bachmanianum* (Otálora et al. 2014)  
 bermudanum Tuck. ex Riddle = *C. pustulatum* (Degelius 1974)  
 bermudiana Tuck. ex Riddle (Fink 1935) Orthographic variant of *C. bermudanum*  
 callibotrys Tuck. = *Rostania callibotrys* (Otálora et al. 2014)  
 callopismum A. Massal. = *Scytinium callopismum* (Otálora et al. 2014)  
 callopismum var. *rhyparodes* (Nyl.) Degel. = *Scytinium callopismum*  
 ceraniscum Nyl. = *Rostania ceranisca* (Otálora et al. 2014)  
 cheileum (Ach.) Ach. = *Blennothallia crispa*  
 coccophorum Tuck. = *Enchylium coccophorum* (Otálora et al. 2014)  
 conglomeratum Hoffm. = *Enchylium conglomeratum* (Otálora et al. 2014)  
 conglomeratum var. *corynesporum* (Malme) Degel. = *Enchylium conglomeratum*  
 conglomeratum var. *crassiusculum* (Malme) Degel. = *Enchylium conglomeratum*  
 crispum (Hudson) Weber ex F. H. Wigg. = *Blennothallia crispa* (Otálora et al. 2014)  
 cristatellum Tuck. = *Enchylium tenax*  
 cristatum (L.) Weber ex F. H. Wigg. = *Lathagrium cristatum* (Otálora et al. 2014)  
 cristatum var. *marginale* (Hudson) Degel. = *Lathagrium cristatum*  
 cyrtaspis Tuck. = *Enchylium conglomeratum*  
 dichotomum (With.) Coppins & J. R. Laundon = *Lathagrium dichotomum* (Otálora et al. 2014)  
 dubium B. de Lesd. = *Enchylium coccophorum* (Otálora et al. 2014)  
 fasciculare (L.) F. H. Wigg. = *Gabura fasciculare* (Jørgensen 2014)  
 fayetteense Fink = *C. pustulatum*  
 fecundum Degel. = *Blennothallia fecunda* (Otálora et al. 2014)  
 fluviatile (Hudson) Steudel = *Lathagrium dichotomum*  
 fragrans (Sm.) Ach. = *Scytinium fragrans* (Otálora et al. 2014)  
 furvum (Ach.) Ach. = *Lathagrium fuscovirens* (Otálora et al. 2014)  
 fuscovirens (With.) J. R. Laundon = *Lathagrium fuscovirens* (Otálora et al. 2014)  
 glaucescens Hoffm. = *Enchylium limosum*  
 granosum auct. = *C. auriforme*  
 kauaiense H. Magn. = *Scytinium kauaiense* (Otálora et al. 2014)  
 laciniatum Nyl. = *C. texanum*  
 leucocarpum Hooker & Taylor = misidentification for North America  
 leucopeplum (Tuck.) A. Schneider = *C. pulchellum* var. *leucopeplum*  
 limosum (Ach.) Ach. = *Enchylium limosum* (Otálora et al. 2014)  
 microphyllum Ach. = *Scytinium fragrans*  
 microptychium Tuck. = *C. leptaleum*  
 multipartitum Sm. = *Callome multipartita* (Otálora et al. 2014)  
 myriococcum (Ach.) Ach. = *Lempholemma polyanthes*  
 novomexicanum B. de Lesd. = *Enchylium coccophorum*

nylanderianum Zahlbr. = *C. texanum*  
 occultatum Bagl. = *Rostania occultata* (Otálora et al. 2014)  
 ohioense (Fink) Zahlbr. = *Enchylium conglomeratum*  
 plicatile (Ach.) Ach. = *Scytinium plicatile* (Otálora et al. 2014)  
 polycarpon Hoffm. = *Enchylium polycarpon* (Otálora et al. 2014)  
 pulposum (Bernh.) Ach. = *Enchylium tenax*  
 pycnocarpum Nyl. = *Enchylium conglomeratum*  
 quadrifidum D. F. Stone & McCune (Stone & McCune 2010) = *Rostania quadrifida* (McCune et al. 2014b)  
 rugosum Kremp. Not known from North America.  
 stenophyllum Nyl. = *Lathagrium dichotomum*  
 subfurfuraceum Degel. = *C. furfuraceum* var. *luzonense*  
 subfurvum sensu Degelius = *C. subflaccidum* Degel.  
 subfurvum (Müll. Arg.) Degel. = *C. rugosum*, but this taxon is not known from North America.  
 tenax (Sw.) Ach. = *Enchylium tenax* (Otálora et al. 2014)  
 tenax var. *ceranoides* (Borrer) Degel. = *Enchylium tenax*  
 tenax var. *corallinum* (A. Massal.) Degel. = *Enchylium tenax*  
 tenax var. *crustaceum* (Kremp.) Degel. = *Enchylium tenax*  
 tenax var. *expansum* Degel. = *Enchylium expansum* (Jørgensen & Goward 2014b)  
 tenax var. *substellatum* (H. Magn.) Degel. = *Enchylium tenax*  
 tuniforme (Ach.) Ach. = *Lathagrium fuscovirens*  
 undulatum Laurer ex Flotow = *Lathagrium undulatum* (Otálora et al. 2014)  
 undulatum var. *granulosum* Degel. = *Lathagrium undulatum*  
 verruciforme auct. = excluded as doubtful

#### COLLEMODES Fink = COLLEMA

bachmanianum Fink = *Enchylium bachmanianum*

#### COLLEMOPSISIDIUM Nyl.

**angermannicum** (Degel.) A. Nordin Syn.: *Pyrenocollema strontianense* (Nordin 2002)  
**bryospilum** (Nyl.) Coppins Syn.: *Arthopyrenia bryospilum* (Fryday 2004a)  
**elegans** (R. Sant.) Grube & B. D. Ryan (Grube & Ryan 2002) Syn.: *Pyrenocollema elegans*  
**foveolatum** (A. L. Sm.) F. Mohr (Dillman et al. 2012)  
**halodytes** (Nyl.) Grube & B. D. Ryan (Grube & Ryan 2002) Syn.: *Arthopyrenia halodytes*,  
*Pyrenocollema halodytes*  
**sublitorale** (Leighton) Grube & B. D. Ryan (Grube & Ryan 2002) Syn.: *Arthopyrenia sublitoralis*, *A. litoralis* auct., *Pyrenocollema sublitorale*

#### COLLEMOPSIS Nyl. ex Crombie

segregata Nyl. ex Hasse = *Lempholemma chalazanum*

#### COMBEA De Not.

californica (Th. Fr.) Follmann & M. Geyer = *Schizopelte californica*

#### CONIAMBIGUA Etayo & Diederich

\***phaeographidis** Etayo & Diederich (Diederich 2003)

#### CONIARTHONIA Grube

**gregarina** (Willey) Grube (Grube 2001) Syn.: *Arthonia gregarina*, *Arthothelium gregarinum*  
**pyrrhula** (Nyl.) Grube (Grube 2001) Syn.: *Arthonia pyrrhula*

#### CONIOCYBE Ach.

furfuracea (L.) Ach. = *Chaenotheca furfuracea*  
 gracilescens Willey = *Chaenotheca chrysocephala* (Selva 2004)  
 gracillima Vainio = *Chaenotheca gracillima*  
 nivea (Hoffm.) Arnold non Tuck. & Mont. = *Sclerophora nivea*



pallida (Pers.) Fr. = Sclerophora nivea  
sulphurea (Retz.) Nyl. = Chaenotheca brachypoda

#### CONIOCYBOPSIS Vainio

arenaria (Hampe ex A. Massal.) Vainio = Microcalicium arenarium

#### CONOTREMA Tuck.

albonigrum Zahlbr. = Trinathotrema stictideum  
urceolatum (Ach.) Tuck. = Stictis urceolatum

#### CORA Fr. (Lawrey et al. 2009)

**glabrata** (Sprengel) Fr. Syn.: Dictyonema glabratum  
pavonia (Sw.) Fr. = Cora glabrata, for North American reports

#### CORISCIMUM Vainio = LICHENOMPHALIA

viride (Ach.) Vainio = Lichenomphalia hudsoniana

#### CORNICULARIA (Schreber) Hoffm.

**normoerica** (Gunn.) Du Rietz  
aculeata (Schreber) Ach. = Cetraria aculeata  
californica (Tuck.) Du Rietz = Kaernefeltia californica  
divergens Ach. = Bryocaulon divergens  
fibrillosa (Ach.) Halsey = Bryoria furcellata  
muricata (Ach.) Ach. = Cetraria muricata  
odontella (Ach.) Westend. = Cetraria odontella  
pseudosatoana Asahina = Bryocaulon pseudosatoanum

#### CORNUTISPORA Piroz.

\***ciliata** Kalb (Cole & Hawksw. 2001)  
\***intermedia** Punith & D. Hawksw. (Esslinger & Egan 1995)  
\***lichenicola** D. Hawksw. & B. Sutton (Kalb et al. 1995)

#### CORTICIFRAGA D. Hawksw. & R. Sant.

\***chugachiana** Zhurb. (Zhurbenko 2007a)  
\***fuckelii** (Rehm) D. Hawksw. & R. Sant. Syn.: Phragmonaevia fuckelii  
\***peltigerae** (Nyl.) D. Hawksw. & R. Sant. (Alstrup & Cole 1998)  
\***santessonii** Zhurb. & Zavarzin (Zhurbenko 2007a)  
\***scrobiculatae** Pérez-Ortega (Spribille et al. 2010)

#### CRATIRIA Marbach (Marbach 2000)

**americana** (Fée) Kalb & Marbach Syn.: Buellia modesta  
**lauricassiae** (Fée) Marbach Syn.: Buellia lauricassiae  
**melanochlora** (Kremp.) Marbach Syn.: Buellia melanochlora

#### CRESTROA (D. Hawksw.) Lendemer & Hodgkinson (Lendemer & Hodgkinson 2012)

**crozalsiana** (B. de Lesd. ex Harm.) Lendemer & Hodgkinson (Lendemer & Hodgkinson 2012) Syn.:  
Canoparmelia crozalsiana, Parmelia crozalsiana, Pseudoparmelia crozalsiana

#### CRESPONEA Egea & Torrente

**chloroconia** (Tuck.) Egea & Torrente Syn.: Lecanactis chloroconia  
**flava** (Vainio) Egea & Torrente (Harris 1995a)  
**leprieurii** (Mont.) Egea & Torrente  
**premnea** (Ach.) Egea & Torrente Syn.: Lecanactis premnea  
**premnea** var. **saxicola** (Leighton) Egea & Torrente  
**proximata** (Nyl.) Egea & Torrente

**CROCEDIA** Link (Galloway & Elix 2013)

**aurata** (Ach.) Link Syns.: *Pseudocyphellaria aurata*, *Sticta aurata*

**CROCYNIA** (Ach.) A. Massal.

**gossypina** (Sw.) A. Massal.

**pyxinoides** Nyl.

*aliciae* Hue = *Lepraria finkii* (fide J. Lendemer)

*alpina* B. de Lesd. = *Leparia neglecta*

*americana* B. de Lesd. = *Lepraria finkii* (fide J. Lendemer)

*finkii* B. de Lesd. = *Lepraria finkii*

*membranacea* (Dickson) Zahlbr. = *Lepraria membranacea*

*moxleyi* Plitt = non-lichenized *Septobasidium* sp.

*neglecta* (Nyl.) Hue = *Lepraria neglecta*

**CRYPTODISCUS** Corda

**gloeocapsa** (Nitschke ex Arnold) Baloch, Gilenstam & Wedin Syn.: *Bryophagus gloeocapsa* (Baloch et al. 2009)

**CRYPTOLECHIA** A. Massal.

**carneolutea** (Turner) A. Massal. Syns.: *Gyalectina carneolutea*, *Gyalecta carneolutea*

**nana** (Tuck.) D. Hawksw. & Dibben (Lücking et al. 2011b)

**CRYPTOTHECIA** Stirton

**effusa** (Müll. Arg.) R. Sant. (Lücking et al. 2011b)

**evergladensis** Seavey (Seavey 2009)

**fuscopunctata** F. Seavey & J. Seavey (Seavey & Seavey 2014a)

**miniata** Vainio ex Lücking (Lücking et al. 2011b)

**punctosorediata** Sparrius (Lücking et al. 2011b)

**striata** G. Thor Syn.: *Chiodecton montagnei* sensu auct. N.A. (Thor 1991)

*rubrocincta* (Ehrenb. : Fr.) G. Thor = *Herpothallon rubrocinctum*

**CRYPTOTHELE** Th. Fr.

**granuliforme** (Nyl.) Henssen Syn.: *Pyrenopsidium granuliforme*, *Pyrenopsis granuliformis*

**permiscens** (Nyl.) Th. Fr. Syn.: *Pyrenopsis phylliscina*

**CULBERSONIA** Essl. (Esslinger 2000a)

**nubila** (Moberg) Essl. (Esslinger 2002b)

*americana* Essl. = *C. nubila*

**CYANISTICTA** Gyelnik

*epiflavoides* Gyelnik (Gyelnik 1931) = *Pseudocyphellaria crocata*

**CYBEBE** Tibell = **CHAENOTHECA** (Tibell 2001)

*gracilentata* (Ach.) Tibell = *Chaenotheca gracilentata* (Tibell 2001)

**CYPHELIOPSIS** Vainio = **THELOMMA**

*bolanderi* (Tuck.) Vainio = *Thelomma mammosum*

**CYPHELIUM** Ach.

**brachysporum** Nád. v.

**brunneum** W. A. Weber

**chloroconium** (Tuck.) Zahlbr.

**inquinans** (Sm.) Trevisan Syn.: *Acolium tympanellum*

**karelicum** (Vainio) Räsänen

**lucidum** (Th. Fr.) Th. Fr.

**notarisii** (Tul.) Blomb. & Forssell



**pinicola** Tibell

\***sessile** (Pers.) Trevisan

**tigillare** (Ach.) Ach.

**trachylioides** (Nyl. ex Branth & Rostrup) Erichsen

*andersonii* Herre = *Thelomma californicum*

*caliciforme* (Flotow) Zahlbr. = *Thelomma occidentale* for most North American records

*californicum* (Tuck.) Zahlbr. = *Thelomma californicum*

*carolinianum* (Tuck.) Zahlbr. = *Thelomma carolinianum*

*farlowii* (Tuck. ex Herre) Herre = *Thelomma californicum*

*occidentale* Herre = *Thelomma occidentale*

*ocellatum* (Körber) Trevisan = *Thelomma ocellatum*

*sancti-jacobi* (Tuck.) Zahlbr. = *Texosporium sancti-jacobi*

*tigillare* subsp. *notarisii* (Tul.) W. A. Weber = *C. notarisii*

*ventricosulum* (Müll. Arg.) Zahlbr. = *C. inquinans*

#### **CYPHOBASIDIUM** Millanes, Diederich & Wedin

\***hypogymniicola** (Diederich & Ahti) Millanes, Diederich & Wedin Syn.: *Cystobasidium*

*hypogymniicola* (Millanes et al. 2016)

\***usneicola** (Diederich & Alstrup) Millanes, Diederich & Wedin Syn.: *Cystobasidium usneicola* (Millanes et al. 2016)

#### **CYSTOBASIDIUM** (Lagerh.) Neuhoﬀ

\***hypogymniicola** Diederich & Ahti (Diederich 1996) = *Cyphobasidium hypogymniicola* (Millanes et al. 2016)

\***usneicola** Diederich & Alstrup (Diederich 1996) = *Cyphobasidium hypogymniicola* (Millanes et al. 2016)

#### **CYSTOCOLEUS** Thwaites

**ebeneus** (Dillwyn) Thwaites

#### **DACAMPIA** A. Massal.

\***engeliana** (Sauter) A. Massal. (Henssen 1995)

**hookeri** (Borrer) A. Massal.

\***lecaniae** Kocourk. & K. Knudsen (Kocourkova & Knudsen 2010)

\***rufescentis** (Vouaux) D. Hawksw. (Zhurbenko & Daniëls 2003)

#### **DACTYLINA** Nyl.

**arctica** (Hooker f.) Nyl.

**beringica** C. D. Bird & J. W. Thomson (Treated as subsp. of *D. arctica* by Kärnefelt & Thell 1996)

**ramulosa** (Hooker f.) Tuck.

*madreporiformis* (Ach.) Tuck = *Allocetraria madreporiformis*

#### **DACTYLOSPORA** Körber

\***aeruginosa** Holien & Ihlen (Ihlen et al. 2004a)

\***amygdalariae** Triebel

\***athallina** (Müll. Arg.) Hafellner Syn.: *Karschia athallina*

\***attendenda** (Nyl.) Arnold

\***borealis** Holien & Ihlen (Ihlen et al. 2004a)

\***deminuta** (Th. Fr.) Triebel

\***frigida** Hafellner (Dillman et al. 2012)

\***glaucomarioides** (Willey ex Tuck.) Hafellner Syn.: *Buellia glaucomarioides*, *Leciographa* “*glaucomarioidea*”

\***inquilina** (Tuck.) Hafellner Syn.: *Buellia inquilina*, *Buelliella inquilina*

\***lobariella** (Nyl.) Hafellner Syn.: *Buelliella nuttallii*

\***lurida** Hafellner (Harris & Lendemer 2005)

\***parasitica** (Flörke ex Sprengel) Zopf Syn.: *Leciographa inspersa*, *Sclerophyton occidentale*

- \***parellaria** (Nyl.) Arnold
- \***pertusariicola** (Willey ex Tuck.) Hafellner Syn.: *Buellia pertusariicola*, *Leciographa pertusariicola*
- \***pleiosperma** Triebel (Hafellner et al. 2002)
- \***porphyrea** Hafellner & Kalb (Etayo & Breuss 1998)
- \***purpurascens** Triebel
- \***rhyparizae** Arnold (Zhurbenko 2013)
- \***saxatilis** (Schaerer) Hafellner var. **saxatilis** Syn.: *Buelliella saxatilis*
- \***urceolata** (Th. Fr.) Arnold Syn.: *Leciographa urceolata*

DEGELIA Arv. & D. J. Galloway

*plumbea* (Lightf.) P. M. Jørg. & P. James = *Pectenidia plumbea* (Ekman et al. 2014)

**DENDRISCOCAULON** Nyl.

**intricatum** (Nyl.) Henssen Syns.: *Leptogidium intricatum*, *Polychidium intricatum*  
**umhausense** (Auersw.) Degel. Syn.: *Polychidium umhausense*

**DENDRISCOSTICTA** B. Moncada & Lücking (Moncada et al. 2013)

**oroborealis** (Goward & Tønsberg) B. Moncada & Lücking Syn.: *Sticta oroborealis* (Moncada et al. 2013)

**wrightii** (Tuck.) B. Moncada & Lücking Syn.: *Sticta wrightii* (Moncada et al. 2013)

**DENDRODOCHIUM** Bonord

\***subeffusum** Ellis & Everh.

**DENDROGRAPHA** Darb.

**alectoroides** Sundin & Tehler (Sundin & Tehler 1996)  
**conformis** (Tehler) Ertz & Tehler (Ertz & Tehler 2011)  
**decolorans** (Turner & Borrer ex Sm.) Ertz & Tehler (Ertz & Tehler 2011)  
**franciscana** (Zahlbr. ex Herre) Ertz & Tehler (Ertz & Tehler 2011)  
**leucophaea** (Tuck.) Darb. Syn.: *Rocella leucophaea*  
*minor* Darb. = *D. leucophaea* (Tuck.) Darb. (Sundin & Tehler 1996)

DERMATINA (Almq.) Zahlbr. = PEZICULA

"*pyrenocarpa*" (Nyl.) Zahlbr. = *Mycoporum compositum*

DERMATISCUM Nyl.

*catawbense* (Willey) Nyl. = *Dermiscellum oulocheila*

**DERMATOCARPON** Eschw.

**americanum** Vainio (Heidmarsson & Breuss 2004)  
**arenosaxi** Amtoft (Amtoft et al. 2008)  
**arnoldianum** Degel.  
**atrogranulosum** Breuss (Breuss 2003)  
**bachmannii** Anders (Heidmarsson & Breuss 2004)  
**dolomiticum** Amtoft (Amtoft et al. 2008)  
**intestiniforme** (Körber) Hasse  
**leptophyllodes** (Nyl.) Zahlbr. (Heidmarsson & Breuss 2004)  
**linkolae** Räsänen (Goward et al. 1996)  
**lorenzianum** Anders  
**luridum** (With.) J. R. Laundon  
**luridum** var. **xerophilum** Amtoft (Amtoft et al. 2008)  
**meiophyllizum** Vainio (Glavich & Geiser 2004)  
**miniaturum** (L.) W. Mann Syn.: *Endocarpon miniaturum*  
**moulinsii** (Mont.) Zahlbr.  
**muhlenbergii** (Ach.) Müll. Arg. (Amtoft et al. 2008)  
**multifolium** Amtoft (Amtoft et al. 2008)



**polyphyllizum** (Nyl.) Blomb. & Forssell (Heidmarsson & Breuss 2004)  
**reticulatum** H. Magn.  
**rivulorum** (Arnold) Dalla Torre & Sarnth.  
 [Entosthelia saxicola B. de Lesd.]  
**schaechtelinii** Werner (Heidmarsson & Breuss 2004)  
**taminium** Heipmarsson (Heidmarsson 2003)  
**tenue** (Müll. Arg.) Heidmarsson (Heidmarsson 2003)  
**tomentulosum** Amtoft (Amtoft 2006)  
**vellereum** Zschacke  
 acarosporoides Zahlbr. = Placidium acarosporoides  
 aquaticum (Weiss) Zahlbr. = D. luridum  
 arboreum (Schwein.) Fink = Placidium arboreum  
 cinereum (Pers.) Th. Fr. = Catapyrenium cinereum  
 #compactum (A. Massal.) Lettau = Heteroplacidium compactum  
 daedaleum (Kremp.) Th. Fr. = Catapyrenium daedaleum  
 fluvatile (Weber) Th. Fr. = D. luridum  
 granulorum (B. de Lesd.) Zahlbr. = Catapyrenium granulorum  
 hepaticum auct. = Placidium squamulosum  
 hepaticum (Ach.) Th. Fr. = Catapyrenium cinereum  
 heppioides Zahlbr. = Placopyrenium heppioides  
 lachneum (Ach.) A. L. Sm. = Placidium lachneum  
 lecideoides (A. Massal.) Hasse = Placopyrenium lecideoides  
 leptophyllum (Ach.) Lång = D. miniatum  
 lyngaei Servit Reported from Greenland and Iceland but not U. S. or Canada  
 michelii (A. Massal.) Zwackh = Placidium michelii  
 miniatum (L.) W. Mann var. complicatum (Lightf.) Th. Fr. = D. miniatum (Heidmarsson 2003)  
 novomexicanum (B. de Lesd.) Zahlbr. = Placidium acarosporoides  
 peltatum (Taylor) Zahlbr. = a sterile psoroid lichen; a misidentification for North America  
 plumbeum (B. de Lesd.) Zahlbr. = Verrucaria inficiens  
 polyphyllum (Wulfen) Dalla Torre & Sarnth. = D. intestiniforme  
 rufescens (Ach.) Th. Fr. = Placidium rufescens  
 rupicola (B. de Lesd.) Zahlbr. = Verrucaria othmarii (Knudsen & Kocourková 2012a)  
 squamellum (Nyl.) Herre = Catapyrenium squamellum  
 tuckermanii (Rav. ex Mont.) Zahlbr. = Placidium arboreum  
 vagans Imshaug = D. reticulatum H. Magn.  
 waltheri (Kremp.) Blomb. & Forssell = Involucropyrenidium waltheri  
 weberi (Ach.) W. Mann = D. luridum  
 zahlbruckneri Hasse = Placopyrenium stanfordii

#### **DERMISCELLUM** Hafellner, H. Mayrhofer & Poelt

**oulocheila** (Tuck.) Lendemer Syn.: Dermaticum catawbense, Opegrapha oulocheila (Lendemer 2003)  
 catawbense (Willey) Hafellner & Poelt = D. oulocheila

#### **DESMAZIERIA** Mont.

cephalota (Tuck.) Follmann & Huneck = Vermilacinia cephalota  
 ceruchis (Ach.) Trevisan = Vermilacinia ceruchis, but absent from North America (Spjut 1996)  
 combeoides (Nyl.) Follmann & Huneck = Vermilacinia combeoides  
 evernioides (Nyl.) Follmann & Huneck = Ramalina lacera  
 homalea (Ach.) Mont. = Niebla homalea  
 peruviana (Ach.) Follmann & Huneck = Ramalina peruviana  
 testudinaria (Nyl.) Follmann & Huneck = Niebla homalea

#### **DIBAEIS** Clem.

**absoluta** (Tuck.) Kalb & Gierl Syn.: Baeomyces absolutus  
**baeomyces** (L. f.) Rambold & Hertel Syn.: Baeomyces roseus

fungoides (Sw.) Kalb & Gierl = A tropical species, not in North America  
rosea (Pers.) Clem. = D. baeomyces

**DICTYOCATENULATA** Finley & E. F. Morris  
**alba** Finley & E. F. Morris (Lendemer & Harris 2004)

**DICTYONEMA** C. Agardh  
**moorei** (Nyl.) Henssen  
**phyllogenum** (Müll. Arg.) Zahlbr. (Lücking et al. 2011b)  
**sericeum** (Sw.) Berk.  
**glabratum** (Sprengel) D. Hawksw. = *Cora glabrata*  
guadalupense (Rabenh.) Zahlbr. = D. sericeum  
irpicinum Mont. = misidentification for North America  
pavonium (Sw.) Parmasto = *Cora glabrata*, for North American reports

**DIDYMELLOPSIS** (P. A. Saccardo) Clem. & Shear  
\***latitans** (Nyl.) Clem. & Shear (Zhurbenko 2009a)  
\***pulposi** (Zopf) Grube & Hafellner (Zhurbenko 2013)

**DIDYMOCYRTIS** Vainio  
\***bryonthae** (Arnold) Hafellner Syn.: *Polycoccum bryonthae* (Ertz et al. 2015a)  
\***cladoniicola** (Diederich, Kocourk. & Etayo) Ertz & Diederich Syn.: *Phoma cladoniicola* (Ertz et al. 2015a)  
\***consimilis** Vainio (Ertz et al. 2015a)  
\***epiphyscia** Ertz & Diederich Syn.: *Phoma physciicola* (Ertz et al. 2015a)  
\***melanelixiae** (Brackel) Diederich, Harris & Etayo (Ertz et al. 2015a)  
\***xanthomendozae** (Diederich & Freebury) Diederich & Freebury Syn.: *Phoma xanthomendozae* (Ertz et al. 2015a)

**DIDYMOSPHERA** Fuckel  
\***epicrassa** (H. Olivier) Vouaux = *Clypeococcum epicrassum*, but see note there

**DIGITOTHYREA** P. P. Moreno & Egea  
**divergens** (Henssen) Moreno & Egea (Sweat et al. 2004)  
**polyglossa** (Nyl.) P. P. Moreno & Egea (Schultz 2002b)

**DIMELAENA** Norman  
#**californica** (H. Magn.) Sheard  
#**lichenicola** K. Knudsen, Sheard, Kocourk. & H. Mayrhofer (Knudsen et al. 2013b)  
**oreina** (Ach.) Norman Syns.: *Rinodina oreina*, *R. hueana*, *R. novomexicana*, *R. suboreina*  
**radiata** (Tuck.) Müll. Arg. (Matzer et al. 1996) Syns.: *Buellia radiata*, *Rinodina radiata*  
**tenuis** (Müll. Arg.) H. Mayrhofer & Wippel (Beeching 2007)  
**thysanota** (Tuck.) Hale & W. L. Culb. Syn.: *Rinodina thysanota*  
**weberi** Sheard  
angelica (Stizenb.) Hale & W. L. Culb. = *Mobergia angelica*  
chrysomelaena (Ach.) Hale & W. L. Culb. = *Rinodina chrysomelaena*  
novomexicana (B. de Lesd.) Hale & W. L. Culb. = *D. oreina*  
suboreina (B. de Lesd.) Hale & W. L. Culb. = *D. oreina*

**DIMERELLA** Trevisan = **COENOGONIUM** (Lücking & Kalb 2000)  
**diluta** (Pers.) Trevisan = *Coenogonium pineti*  
**lutea** (Dickson) Trevisan = *Coenogonium luteum*  
**pineti** (Ach.) Vězda = *Coenogonium pineti*

**DIMIDIOPHGRAPHIA** Ertz & Tehler (Ertz & Tehler 2011)  
**longissima** (Müll. Arg.) Ertz & Tehler (Ertz & Tehler 2011) Syn.: *Graphis*, *atrorubens*, *Opegrapha*



longissima

**DINEMASPORIUM** Lév.

\***strigosum** (Fr.) Sacc. (Alstrup & Cole 1998)

**DIORYGMA** Eschw.

**antillarum** (Vainio) Nelsen, Lücking & Rivas Plata (Nelsen et al. 2012) Syn.: Herpothallon antillarum

**basinigrum** F. Seavey & J. Seavey (Seavey & Seavey 2014a)

**junghuhnii** (Mont. & Bosch) Kalb, Staiger & Elix (Tripp et al. 2010)

**microsporum** M. Cáceres & Lücking (Lumbsch et al. 2011; Lücking et al. 2011b)

**poitaei** (Fée) Kalb, Staiger & Elix (Kalb et al. 2004) Syn.: Graphina virginea

**pruinsum** (Ehrh.) Kalb Syn.: Graphina platyleuca (Tripp et al. 2010)

**reniforme** (Fée) Kalb, Staiger, & Elix (Tripp et al. 2010)

**DIPLOICIA** A. Massal.

**canescens** (Dickson) A. Massal. Syn.: Buellia canescens

**DIPLOLAEVIOPSIS** Giralt & D. Hawksw.

\***ranula** Giralt & D. Hawksw. (Diederich 2003)

**DIPLOSCHISTELLA** Vainio

**athalloides** (Nyl.) Lücking, Knudsen & Fryday (Lücking et al. 2007) Syn.: Rhizocarpon athalloides

**DIPLOSCHISTES** Norman

**actinostomus** (Ach.) Zahlbr. Syn.: Urceolaria actinostoma

**aeneus** (Müll. Arg.) Lumbsch

**arabiensis** Lumbsch

**badius** Lumbsch & Elix

**caesioplumbeus** (Nyl.) Vainio (Lumbsch 2002)

**candidissimus** (Kremp.) Zahlbr. (Esslinger & Egan 1995)

**diacapsis** (Ach.) Lumbsch Syn.: Urceolaria albissima

**gypsaceus** (Ach.) Zahlbr.

**hypoleucus** Zahlbr.

**muscorum** (Scop.) R. Sant. subsp. **muscorum**

**scruposus** (Schreber) Norman Syn.: Urceolaria scruposa

albissimus (Ach.) Dalla Torre & Sarnth. = D. diacapsis

**bisporus** (Bagl.) J. Steiner = *Ingvariella bisporus*

bryophilus (Ehrh. ex Ach.) Zahlbr. = D. muscorum subsp. muscorum

canadensis Räsänen = D. muscorum subsp. muscorum

scruposus (Schreber) Norman var. parasiticus (Sommerf.) Zahlbr. = D. muscorum

stramineus Zahlbr. = D. hypoleucus

**DIPLOTOMMA** Flotow

**alboatrum** (Hoffm.) Flotow Syns.: Buellia alboatra, Rhizocarpon alboatrum

**ambiguum** (Ach.) Flagey Syn.: Buellia ambigua

**chlorophaeum** (Hepp ex Leighton) Szatala Syns.: Rhizocarpon chlorophaeum, Buellia chlorophaea

**epipolium** (Ach.) Arnold Syns.: Buellia epipolia, Rhizocarpon cumulatum

**nivalis** (Bagl. & Carestia) Hafellner (Hafellner & Türk 1995) Syn.: Buellia nivalis

**penichrum** (Tuck.) Szatala Syns.: Buellia penichra, Rhizocarpon penichrum

**venustum** (Körber) Körber Syn.: Buellia venusta, B. lecanoroides

\***pulverulentum** (Anzi) D. Hawksw. (Molina et al. 2002) = Tetramelas pulverulentus

**DIRINA** Fr.

**catalinariae** Hasse

**massiliensis** Durieu & Mont. (Harris & Ladd 2005; reported as f. soledata)

**paradoxa** (Fée) Tehler

approximata Zahlbr. subsp. hioramii (B. de Lesd.) Tehler = *D. paradoxa*  
calcicola Sparrius (Sparrius 2004a) = *Fulvophyton calcicola* (Tehler et al. 2013)  
californica Tuck. = *Sigridea californica*  
franciscana Zahlbr. ex Herre = *Dendrographa franciscana*  
hassei Zahlbr. = *Sigridea californica*  
rediunta Hasse = *Schismatomma rediunta*

**DIRINARIA** (Tuck.) Clem.

**aegialita** (Afz.) B. J. Moore Syn.: *Physcia aspera*, *P. aegialita*  
**applanata** (Fée) D. D. Awasthi  
**confluens** (Fr.) D. D. Awasthi  
**confusa** D. D. Awasthi  
**confusa** var. **saxicola** (Räsänen) D. D. Awasthi  
**frostii** (Tuck.) Hale & W. L. Culb. Syns.: *Physcia frostii*, *Pyxine frostii*  
**leopoldii** (Stein) D. D. Awasthi  
**neotropica** Kalb (Kalb 2004a)  
**papillulifera** (Nyl.) D. D. Awasthi  
**picta** (Sw.) Clem. & Shear Syns.: *Physcia picta*, *Pyxine picta*  
**purpurascens** (Vainio) B. J. Moore Syn.: *Physcia purpurascens*  
*aspera* (H. Magn.) D. D. Awasthi = *D. aegialita*

**DISCOTHECIUM** Zopf = **ENDOCOCCUS** Nyl.

\**gemmiferum* Vouaux = an uncertain species of *Endococcus*

**DISTOPYRENIS** Aptroot

**americana** Aptroot  
**pachyospora** Aptroot (Harris 1995a)  
**quercicola** R. C. Harris (Harris 1995a)  
**submuriformis** R. C. Harris (Harris 1995a)

**DITREMIS** Clem. = **ANISOMERIDIUM**

*albiseda* (Nyl.) R. C. Harris = *Anisomeridium albisedum*  
*ambigua* (Zahlbr.) R. C. Harris = *Anisomeridium ambiguum*  
*anisoloba* (Müll. Arg.) R. C. Harris = *Anisomeridium anislobum*  
*biformis* (Borrer) R. C. Harris = *Anisomeridium biforme*  
*carinthiaca* (Steiner) R. C. Harris = *Anisomeridium carinthiacum*  
*distans* (Willey) R. C. Harris = *Anisomeridium distans*  
*finkii* R. C. Harris = *Anisomeridium finkii*  
*leucochlora* (Müll. Arg.) R. C. Harris = *Anisomeridium leucochlorum*  
*macrospora* R. C. Harris = *Anisomeridium aureopunctatum*  
*nyssigena* (Ellis & Everh.) R. C. Harris = *Anisomeridium polypori*  
*quaternaria* R. C. Harris = *Anisomeridium quaternarium*  
*sanfordensis* (Zahlbr.) R. C. Harris = *Anisomeridium excaecariae*  
*subprostans* (Nyl.) R. C. Harris = *Anisomeridium subprostans*  
*tamarindii* (Fée) R. C. Harris = *Anisomeridium tamarindii*  
*terminata* (Nyl.) R. C. Harris = *Anisomeridium terminatum*  
*tuckerae* (R. C. Harris) R. C. Harris = *Anisomeridium tuckerae*

**DUFOUREA** Ach.

*madreporiformis* (Ach.) Ach. = *Allocetraria madreporiformis*

**DYPLOLABIA** A. Massal.

**afzelii** (Ach.) A. Massal. Syn.: *Graphis afzelii* (Staiger 2002)

**ECHINODISCUS** Etayo & Diederich

\***lesdainii** (Vouaux) Etayo & Diederich (Kocourková et al. 2010)



## **ECHINOPLACA** Fée

- areolata** Lücking & W. R. Buck (Lücking et al. 2007)
- basalis** W. B. Sanders & Lücking (Sanders & Lücking 2015)
- furcata** Sérus. subsp. neotropica Lücking (Lücking et al. 2007)
- intercedens** Vězda
- leucotrichoides** (Müll. Arg.) R. Sant. (Lücking et al. 2011b)
- lucernifera** Kalb & Vězda (Lücking et al. 2007)
- pellicula** (Müll. Arg.) R. Sant.
- similis** Kalb & Vězda (Lücking et al. 2007)
- tetraplaca** (Zahlbr.) Lücking (Lücking et al. 2007)

## **ECHINOTHECIUM** Zopf

- \***aerophilum** Alstrup & M. S. Cole (Alstrup & Cole 1998)
- \***reticulatum** Zopf = *Sphaerellothecium reticulatum*

## **EDRUDIA** W. P. Jordan

- constipans** (Nyl.) W. P. Jordan Syn.: *Caloplaca constipans*, *Lecanora constipans*

## **EIGLERA** Hafellner

- flavida** (Hepp) Hafellner Syns.: *Lecanora flavida*, *Aspicilia flavida*

## **ELIXIA** Lumbsch

- flexella** (Ach.) Lumbsch (Spribille & Björk 2008)

## **ENCHYLIUM** (Ach.) Gray (Otálora et al. 2014)

- bachmanianum** (Fink) Otálora, P. M. Jørg. & Wedin Syns.: *Collema bachmanianum*, *Collemodes bachmanianum*
- coccophorum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema coccophorum*, *C. dubium*, *C. novomexicanum*, *Synechoblastus coccophorus*
- conglomeratum** (Hoffm.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema conglomeratum*, *C. pycnocarpum*, *Synechoblastus ohioense*, *S. cyrtaspis*, *S. pycnocarpus*
- expansum** (Degel.) P. M. Jørg. Syn.: *Collema tenax* var. *expansum* (Jørgensen & Goward 2015)
- limosum** (Ach.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema glaucescens*, *C. limosum*
- polycarpon** (Hoffm.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema polycarpon*, *Synechoblastus polycarpus*, *S. wyomingensis*
- substellatum** (H. Magn.) P. M. Jørg. (Jørgensen & Goward 2015)
- tenax** (Sw.) Gray Syn.: *Collema tenax*

## **ENDOCARPON** Hedwig

- adscendens** (Anzi) Müll. Arg.
- adsurgens** Vainio
- diffractellum** (Nyl.) Gueidan & Cl. Roux (Gueidan et al. 2007) Syns.: *Staurothele diffractella*, *Verrucaria diffractella*
- lepidallum** Nyl.
- loscosii** Müll. Arg. (Breuss 2002a)
- pallidulum** (Nyl.) Nyl. (Breuss 2002a)
- pallidum** Ach.
- petrolepideum** (Nyl.) Nyl.
- pseudosubnitescens** Breuss (Knudsen 2005b)
- pulvinatum** Th. Fr. Syns.: *Pyrenothamnia brandegei*, *P. spraguei*
- pusillum** Hedwig
- schisticola** B. de Lesd. (Breuss 2002a)
- simplicatum** (Nyl.) Nyl. (Breuss 2002a)
- subnitescens** Nyl.
- tenuissimum** (Degel.) Lendemer & E. Tripp Syn.: *Staurothele tenuissima* (Lendemer et al. 2013)

**tortuosum** Herre

arboreum Schwein. (Mohr 1901) = *Placidium arboreum*

drummondii (Tuck.) M. Choisy = *Staurothele drummondii*

miniaturum (L.) Schaerer (Mohr 1901) = *Dermatocarpon miniaturum*

moenium Vainio = *Acarospora moenium*

monicae Zahlbr. = *Staurothele monicae*

\*ochroleucum Tuck. = *Heterocarpon ochroleucum*

tuckermanii Rav. ex Mont. = *Placidium arboreum* (Lendemer & Yahr 2004)

wilmsoides Zahlbr. = *Staurothele drummondii*

**ENDOCOCCUS** Nyl.

\***apiciicola** (J. Steiner) R. Sant. (Diederich 2003)

\***incrassatus** Etayo & Breuss (Knudsen & Kocourková 2008b)

\***macrosporus** (Arnold) Nyl. (Hafellner et al. 2002)

\***matzeri** D. Hawksw. & Iturr. (Knudsen & Kocourková 2009b)

\***nanellus** Ohlert (Diederich 2003)

\***oreinae** Hafellner (Hafellner et al. 2002)

\***perpusillus** Nyl.

\***propinquus** (Körber) D. Hawksw.

\***rugulosus** Nyl. (Knudsen & Kocourková 2010b)

\***stigma** (Körber) Stizenb. (Hafellner et al. 2002)

\***thelommatis** Kocourk. & K. Knudsen (Kocourková & Knudsen 2011)

\***verrucosus** Hafellner (Hafellner et al. 2002)

\***zahlbrucknerellae** (Henssen) D. Hawksw. Syn.: *Ticothecium zahlbrucknerella*

\***buelliae** (C. W. Dodge) Matzer (Matzer et al. 1996) = *E. matzeri* for North American reports

**ENDOHYALINA** Marbach

**ericina** Giralt, van den Boom & Elix var. **ericina** (Giralt et al. 2010)

\***insularis** (Arnold) Giralt, van den Boom & Elix Syn.: *Rinodina insularis* (Nadyeina et al. 2010)

**rappii** (Imshaug ex R. C. Harris) Marbach Syn.: *Buellia rappii* (Marbach 2000)

**circumpallida** (H. Magn.) Marbach (Marbach 2000) = *Buellia circumpallida* (Giralt et al. 2010)

**ENDOPYRENIUM** Flotow

americanum B. de Lesd. = *Verrucaria americana*

bajadanae B. de Lesd. = *Placidium acarosporoides*

crustaceum B. de Lesd. = *Catapyrenium granulosum*

granulosum B. de Lesd. = *Catapyrenium granulosum*

novomexicanum B. de Lesd. = *Placidium acarosporoides*

plumbeum B. de Lesd. = *Verrucaria inficiens*

rupicola B. de Lesd. = *Verrucaria othmarii*

tuckermanii (Rav. ex Mont.) Müll. Arg. = *Placidium arboreum*

**ENTEROGRAPHA** Fée

**anguinella** (Nyl.) Redinger (Sparrius 2004b) Syn.: *Schismatomma pallidellum* auct.

**bradleyana** F. Seavey & J. Seavey (Seavey & Seavey 2014b)

**caudata** F. Seavey & J. Seavey (Seavey & Seavey 2014b)

**hutchinsiae** (Leighton) A. Massal. (Sparrius 2004b)

**murrayana** F. Seavey & J. Seavey (Seavey & Seavey 2014b)

**nitidula** F. Seavey & J. Seavey (Seavey & Seavey 2014b)

**oregonensis** Sparrius & Björk (Sparrius & Björk 2008)

\***osagensis** C. A. Morse (Morse 2013)

**pallidella** (Nyl.) Redinger (Seavey & Seavey 2012)

**quassiicola** Fée

**subserialis** (Nyl.) Redinger (Seavey & Seavey 2014a)

**zonata** (Körber) Källsten Syn.: *Opegrapha zonata* (Ertz et al. 2009)

carnea (Eckfeldt) R. C. Harris = *Mazosia ocellata*



elegans (Eschw.) Tuck. = Sclerophyton elegans  
lecanoroides R. C. Harris = E. anguinella

**ENTEROSTIGMA** Müll Arg.

montagnaei (Tuck) Fink (Fink 1935) = Cryptothecia striata(Thor 1991)

**ENTOSTHELIA** (Wallr.) Hue

saxicola B. de Lesd. = unknown Dermatocarpon sp.

**EOPYRENULA** R. C. Harris

**intermedia** Coppins Syn.: Pyrenula leucoplaca var. pluriloculata

**parvispora** R. C. Harris & Aptroot

leucoplaca (Wallr.) R. C. Harris = misidentification for North America (fide R. Harris)

**EPAPHROCONIDIA** Calatayud & V. Atienza

\***hawksworthii** Calatayud & V. Atienza (Diederich 2003)

**EPHEBE** Fr.

**americana** Henssen

**hispidula** (Ach.) Horw. Syn.: Ephebeia hispidula

**lanata** (L.) Vainio

**ocellata** Henssen

**perspinulosa** Nyl.

**solida** Bornet

mamillosum (Lyngb.) E. Fr. (Fink 1935) Possibly Stigonema mamillosum, a cyanobacterium

pubescens (Ach.) Fr. = Pseudephebe pubescens

**EPHEBEIA** Nyl. = EPHEBE

hispidula (Ach.) Nyl. = Ephebe hispidula

**EPICLADONIA** D. Hawksw.

\***sandstedei** (Zopf) D. Hawksw. (Scholz 1998)

\***simplex** D. Hawksw. (Esslinger & Egan 1995)

**EPICOCCUM** Link

\***purpurascens** Schltdl. (Diederich 2003)

**EPIGLOEA** Zukał

**intermedia** Döbbeler (Lendemer & Harris 2004)

**medioincrassata** (Grumann) Döbbeler (Fryday 2004a)

**pleiospora** Döbbeler (Buck & Harris 2002)

**renitens** (Grumann) Döbbeler (Spribille et al. 2010)

**soleiformis** Döbbeler (Buck & Harris 2002)

**EPILICHEN** Clem.

#**glauconigellus** (Nyl.) Hafellner (Zhurbenko 2009a)

\***scabrosus** (Ach.) Clem. Syn.: Buellia scabrosa

\***stellatus** Triebel

**EPITHAMNOLIA** Zhurb. (Zhurbenko 2012)

\***karatyginii** Zhurb.

**ERINACELLUS** T. Sprib., Muggia & Tønsberg (Spribille et al. 2014b)

**dendroides** (Henssen) T. Sprib., Muggia & Tønsberg Syn.: Spilonema dendroides

**ERIODERMA** Fée

**mollissimum** (Samp.) Du Rietz  
**pedicellatum** (Hue) P. M. Jørg.  
**sorediatum** D. J. Galloway & P. M. Jørg.  
boreale Ahlner = E. pedicellatum

**ERYTHRICIUM** J. Erikss. & Hjortstam (Hawksworth & Helcini 2015)

\***aurantiacum** (Lasch) D. Hawksw. & A. Henrici Syn.: *Marchandiobasidium aurantiacum*  
(Hawksworth & Helcini 2015)

**ESCHATOGONIA** Trevisan

**prolifera** (Mont.) R. Sant. (Seavey et al. 2014)

**ESSLINGERIANA** Hale & M. J. Lai

**idahoensis** (Essl.) Hale & M. J. Lai Syn.: *Cetraria idahoensis*

**ETAYOA** Diederich & Ertz (Ertz et al. 2014)

\***trypethelii** (Flakus & Kukwa) Diederich & Ertz

**EUGENIELLA** Lücking, Sérus. & Kalb (Lücking et al. 2011b)

**leucocheila** (Tuck.) Lücking, Sérus. & Kalb (Lücking et al. 2011b)

**EUOPSIS** Nyl.

**granatina** (Sommerf.) Nyl. Syns.: *Pyrenopsis granatina*, *Lecanora granatina*, *Pannaria granatina*  
**pulvinata** (Schaerer) Nyl. Syn.: *Pyrenopsis pulvinata*

**EVERNIA** Ach.

**divaricata** (L.) Ach.  
**mesomorpha** Nyl.  
**perfragilis** Llano  
**prunastri** (L.) Ach.  
ceratea (Ach.) Zopf (Fink 1935) = *Pseudevernia furfuracea* (L.) Zopf, but a misidentification for North America  
esorediosa (Müll. Arg.) Du Rietz = misidentification for North America (Bird 1974)  
furfuracea (L.) W. Mann = *Pseudevernia consocians* and *P. intensa* for North American records  
thamnodes (Flotow) Arnold = *E. mesomorpha*  
vulpina (L.) Ach. = *Letharia vulpina*

**EVERNIASTRUM** Hale ex Sipman = *HYPOTRACHYNA* (Divakar et al. 2013)

**catawbiense** (Degel.) Hale ex Sipman = *Hypotrachyna catawbiensis*  
**sorocheilum** (Vainio) Hale ex Sipman = *Hypotrachyna sorocheila*, but reports apparently based on *H. catawbiense*

**EVERNIICOLA** D. Hawksw.

\***flexispora** D. Hawksw.

**FARNOLDIA** Hertel

**hypocrita** (A. Massal.) Fröberg Syns.: *Lecidea hypocrita*, *L. lithospersa*, *L. ypocrita*  
**jurana** (Schaerer) Hertel Syns.: *Lecidea jurana*, *L. albosuffusa*, *Tremolecia jurana*, *Melanolecia jurana*  
**micropsis** (A. Massal.) Hertel Syns.: *Lecidea rhaetica*, *Melanolecia micropsis*, *Tremolecia nivalis*, *T. micropsis*

**FAYODIA** Kühner

\***leucophylla** (Gillet) M. T. Lange = *Gamundia leucophylla* (Bigelow 1983)  
\***striatula** (Kühner) Singer = *Gamundia striatula* (Raitelhuber 1983)



## **FELLHANERA** Vězda

- aurantiaca** (Vězda) Vězda Syn.: *Bacidia aurantiaca*
- bouteillei** (Desm.) Vězda Syn.: *Catillaria bouteillei*
- crucitignorum** C. A. Morse & Ladd (Morse & Ladd 2013)
- eriniae** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- fallax** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- floridana** (Tuck.) S. Ekman Syn.: *Bacidia floridana*, *Biatora floridana*, *Bilimbia floridana*
- granulosa** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- hybrida** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- minnisinkorum** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- montesfumosi** R. C. Harris & Lendemer (Harris & Lendemer 2009)
- rhapidophylli** (Rehm)Vězda (Seavey & Seavey 2014a)
- silicis** R. C. Harris & Ladd (Harris & Lendemer 2009)
- subtilis** (Vězda) Diederich & Sérus. (Goward et al. 1996)

## **FELLHANEROPSIS** Sérus. & Coppins

- myrtillicola** (Erichsen) Sérus. & Coppins (Lendemer & Knudsen 2011)
- vezdae** (Coppins & P. James) Sérus. & Coppins (Tønsberg 1997)

## **FIBRILLITHECIS** A. Frisch (Frisch 2006)

- confusa** [Lücking, Kalb & Rivas Plata \(Rivas Plata et al. 2010\)](#)
- insignis** (Zahlbr.) A. Frisch (Frisch 2006) = *F. confusa* ([Rivas Plata et al. 2010](#))

## **FISSURINA** Fée

- aggregatula** Common & Lücking (Lücking et al. 2011b)
- alligatorensis** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- americana** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- analphabetica** Common & Lücking (Lücking et al. 2011b)
- cingalina** (Nyl.) Staiger (Lücking et al. 2011b)
- columbina** (Tuck.) Staiger Syns.: *Graphina columbina*, *G. virginalis*, *Graphis columbina*, *Phaeographina columbina* (Staiger 2002)
- confusa** Common & Lücking (Lücking et al. 2011b)
- crassilabra** Mont. & Bosch (Lücking et al. 2011b)
- cypressi** (Müll. Arg.) Lendemer Syn.: *Graphina cypressi* (Lendemer 2007a)
- dumastioides** (Fink) Staiger Syn.: *Graphina dumastioides*, *Graphis dumastioides* (Staiger 2002)
- egena** (Nyl.) Nyl. (Lücking et al. 2011b)
- humilis** (Vainio) Staiger (Staiger & Kalb 2004)
- ilicicola** Lendemer & R. C. Harris (Lendemer & Harris 2014a)
- illiterata** (R. C. Harris) Lendemer Syn.: *Graphis illiterata* (Lendemer & Knudsen 2008b)
- incrustans** Fée Syns.: *Graphina incrustans*, *G. glaucoderma*, *Graphis incrustans* (Staiger 2002)
- insidiosa** C. Knight & Mitten Syn.: *Graphis beaumontii*, *G. insidiosa* (Staiger 2002)
- inspersa** Common & Lücking (Lücking et al. 2011b)
- insculpta** Mont. Syn.: *Graphina babingtonii* (Staiger 2002, Tripp et al. 2010)
- leuconephela** Nyl. Syn. : *Graphina leuconephela* (Staiger 2002, Tripp et al. 2010)
- mexicana** (Zahlbr.) Lücking & Rivas Plata (Lücking et al. 2011b)
- nitidescens** (Nyl.) Nyl. Syns.: *Graphina nitidescens*, *Graphis nitidescens* (Staiger 2002)
- pseudostromatica** Lücking & Rivas Plata (Lücking et al. 2011b)
- radiata** Mont. (Lücking et al. 2011b)
- rufula** (Mont.) Staiger Syn.: *Graphis rufula* (Staiger 2002)
- scolecitis** (Tuck.) Lendemer Syns.: *Graphina scolecitis*, *Graphis scolecitis* (Lendemer 2007a) North American records of *Graphina adscribens* belong here
- subcomparimuralis** Common & Lücking (Lumbsch et al. 2011; Lücking et al. 2011b)
- subnitida** (Nyl.) Zahlbr. (Staiger 2002, Tripp et al. 2010)
- subnitidula** (Nyl.) Staiger Syns.: *Graphina subnitidula*, *Graphis subnitidula* (Staiger 2002)
- tachygrapha** (Nyl.) Staiger (Lücking et al. 2011b)
- tuckermaniana** Common & Lücking (Lücking et al. 2011b)

**varieseptata** Common & Lücking (Lücking et al. 2011b)  
subcontexta (Nyl.) Nyl. = *F. rufula* (Lücking et al. 2011b)

**FISTULARIELLA** Bowler & Rundel

*almquistii* (Vainio) Bowler & Rundel = *Ramalina almquistii*  
*dilacerata* (Hoffm.) Bowler & Rundel = *Ramalina dilacerata*  
*geniculata* (Hooker f. & Taylor) Bowler & Rundel = *Ramalina geniculata*  
*inflata* (Hooker f. & Taylor) Bowler & Rundel = *Ramalina inflata*  
*minuscula* (Nyl.) Bowler & Rundel = *Ramalina dilacerata*  
*roesleri* (Hochst. ex Schaerer) Bowler & Rundel = *Ramalina roesleri*  
*scoparia* (Vainio) Bowler & Rundel = *Ramalina scoparia*

**FLAKEA** O. E. Erikss. (Hansen 2003; Perlmutter 2006)

**papillata** O. E. Erikss. (Hansen 2003; Perlmutter 2006)

**FLAVOCETRARIA** Kärnefelt & A. Thell

**cucullata** (Bellardi) Kärnefelt & A. Thell Syns.: *Cetraria cucullata*, *Allocetraria cucullata*  
**minuscula** (Elenkin & Savicz) Ahti, Poryadina & Zhurb. (Zhurbenko et al. 2005)  
**nivalis** (L.) Kärnefelt & A. Thell Syns.: *Cetraria nivalis*, *Allocetraria nivalis*

**FLAVOPARMELIA** Hale

**baltimorensis** (Gyelnik & Fóris) Hale Syns.: *Parmelia baltimorensis*, *Pseudoparmelia baltimorensis*  
**caperata** (L.) Hale Syns.: *Parmelia caperata*, *P. cylisphora*, *P. flavicans*, *P. herreana*, *P. negativa*,  
*Pseudoparmelia caperata*  
**rutidota** (Hooker f. & Taylor) Hale Syns.: *Parmelia rutidota*, *Pseudoparmelia rutidota*, and *P. conspersa*  
var. *subconspersa* and *Xanthoparmelia subconspersa* for North American records.  
**subcapitata** (Nyl. ex Hasse) Hale ex DePriest & B. Hale (Knudsen et al. 2005) Syn.: *Parmelia*  
*subcapitata*  
[\[\*Parmelia concreta\* Stizenb.\] This name was apparently never effectively published; identified as an uncertain species of \*Flavoparmelia\* by Hale & DePriest \(1999\), although an apparent ‘type’ specimen in FH was annotated by Mason Hale as an \*Aspicilia\* sp.](#)

**FLAVOPLACA** Arup, Søchting & Frödén (Arup et al. 2013)

**austrocitrina** (Vondrák, Říha, Arup & Søchting) Arup, Søchting & Frödén Syn.: *Caloplaca*  
*austrocitrina*  
**citrina** (Hoffm.) Arup, Frödén & Søchting Syn.: *Caloplaca citrina*  
**flavocitrina** (Nyl.) Arup, Frödén & Søchting Syn.: *Caloplaca flavocitrina*  
**granulosa** (Müll. Arg.) Arup, Frödén & Søchting Syn.: *Caloplaca granulosa*  
**marina** (Wedd.) Arup, Frödén & Søchting Syn.: *Caloplaca marina*  
**microthallina** (Wedd.) Arup, Frödén & Søchting Syn.: *Caloplaca microthallina*

**FLAVOPUNCTELIA** (Krog) Hale

**darrowi** (J. W. Thomson) Hale Syns.: *Parmelia darrowi*, *Punctelia darrowi*  
**flaventior** (Stirton) Hale Syns.: *Parmelia flaventior*, *P. andreana*, *P. kernstockii*, *Punctelia flaventior*  
**praesignis** (Nyl.) Hale Syns.: *Parmelia praesignis*, *P. incorrupta*, *P. caperata* var. *incorrupta*, *Punctelia*  
*praesignis*  
**soredica** (Nyl.) Hale Syns.: *Parmelia soredica*, *P. ulophyllodes*, *P. manshurica*, *Punctelia soredica*

**FORAMINELLA** S. F. Meyer = **PARMELIOPSIS**

**FORSSELLIA** Zahlbr. = **PTERYGIOPSIS**

*minnesotensis* (Fink) Fink = *Lichinella minnesotensis*  
*neglecta* Erichsen = *Pterygiopsis neglecta*

**FOURAGEA** Trevisan (Frisch et al. 2014)

**filicina** (Mont.) Trevisan Syn.: *Opegrapha filicina* (Frisch et al. 2014)



**FRUTIDELLA** Kalb (Kalb 1994)

**caesioatra** (Schaerer) Kalb (Kalb 1994) Syn.: *Lecidea caesioatra*, *L. arctica*

**pullata** (Norman) Schmull (Schmull et al. 2011) Syns.: *Biatora pullata*, *Lecidea pullata*

**FULGENSIA** A. Massal. & De Not. = **GYALOLECHIA** (Arup et al. 2013)

**bracteata** (Hoffm.) Räsänen subsp. **bracteata** = *Gyalolechia bracteata* subsp. **bracteata**

**bracteata** subsp. **bracteata** var. **alpina** (Th. Fr.) Poelt = *Gyalolechia bracteata* subsp. **bracteata** var. **alpina**

**bracteata** subsp. **deformis** Poelt (Esslinger & Egan 1995) = *Gyalolechia bracteata* subsp. **deformis**

**desertorum** (Tomin) Poelt = *Gyalolechia desertorum*

**fulgens** (Sw.) Elenkin = *Gyalolechia fulgens*

**subbracteata** (Nyl.) Poelt (Brodo et al. 2001, Kasalicky 2004) = *Gyalolechia subbracteata*

**FULGIDEA** Bendiksby & Timdal (Bendiksby & Timdal 2013)

**oligospora** (Timdal) Bendiksby & Timdal Syn.: *Hypocenomyce oligospora*

**sierrae** (Timdal) Bendiksby & Timdal Syn.: *Hypocenomyce sierrae*

**FULVOPHYTON** Ertz & Tehler

**calicola** (Sparrius) Tehler & Ertz Syn.: *Dirina calicola* (Tehler et al. 2013)

**FUSARIUM** Link

\***peltigerae** Westend. (Spribille et al. 2010)

**FUSCIDEA** V. Wirth & Vězda

**aleutica** (Degel.) Fryday (Fryday 2008)

**appalachensis** Fryday (Fryday 2008)

**arboricola** Coppins & Tønsberg

**gothoburgensis** (H. Magn.) V. Wirth & Vězda (Fryday 2006)

**intercincta** (Nyl.) Poelt

**lowensis** (H. Magn.) R. A. Anderson & Hertel Syn.: *Lecidea lowensis*

**mollis** (Wahlenb.) V. Wirth & Vězda Syn.: *Lecidea mollis*

**praeruptorum** (Du Rietz & H. Magn.) V. Wirth & Vězda Syn.: *Lecidea praeruptorum*

**pusilla** Tønsberg

**recensa** (Stirton) Hertel, V. Wirth & Vězda Syns.: *Lecidea recensa*

**recensa** var. **arcuatula** (Arnold) Fryday Syns. *Lecidea arcuatula*, *L. gyrodes* (Fryday 2008)

**scrupulosa** (Eckfeldt) Fryday (Fryday 2008) Syn.: *Biatora scrupulosa*, *Lecidea scrupulosa*, *L. kochiana* var. **subreagens**

**texana** Fryday (Fryday 2008)

**thomsonii** Brodo & V. Wirth (Brodo & Wirth 1998)

**cyathoides** (Ach.) V. Wirth & Vězda = misidentification for North America (Fryday 2008)

**kochiana** (Hepp) V. Wirth & Vězda = misidentification for North America (Fryday 2008)

**lightfootii** (Sm.) Coppins & P. James (Aptroot 1996) = misidentification for North America (Tønsberg 2002, Fryday 2008)

**placidensis** (H. Magn.) R. C. Harris = *Lecanora placidensis*

**subfilamentosa** (Zahlbr.) Brako = *Lecidea subfilamentosa* (Fryday 2008)

**subreagens** (H. Magn.) Oberholl. & V. Wirth = *Fuscidea scrupulosa* (Fryday 2008)

**FUSCOPANNARIA** P. M. Jørg.

**ahlneri** (P. M. Jørg.) P. M. Jørg. Syn.: *Pannaria ahlneri*

**alaskana** P. M. Jørg. & Tønsberg (Jørgensen 2000c)

**aurita** P. M. Jørg. (Jørgensen 2000c)

**cheiroloba** (Müll. Arg.) P. M. Jørg. (Jørgensen 2000c) Syn.: *Parmeliella cheiroloba*

**confusa** (P. M. Jørg.) P. M. Jørg. (Jørgensen 2000c)

**convexa** P. M. Jørg. (Jørgensen 2005)

**coralloidea** P. M. Jørg. (Jørgensen 2000c)

**crustacea** P. M. Jørg. (Jørgensen 2000c)

**cyanolepra** (Tuck.) P. M. Jørg. (Jørgensen 2000b) Syns.: *Pannaria cyanolepra*, *Parmeliella cyanolepra*  
**incisa** (Müll. Arg.) P. M. Jørg. (Jørgensen 2000c)  
**laceratula** (Hue) P. M. Jørg. Syn.: *Pannaria laceratula*  
**leprosa** P. M. Jørg. & Tønsberg (Jørgensen 2000c)  
**leucosticta** (Tuck.) P. M. Jørg. Syn.: *Pannaria leucosticta*  
**leucostictoides** (Ohlsson) P. M. Jørg. Syn.: *Pannaria leucostictoides*  
**maritima** (P. M. Jørg.) P. M. Jørg. Synonym: *Pannaria maritima*  
**mediterranea** (Tav.) P. M. Jørg. Syn.: *Pannaria mediterranea*  
**pacifica** P. M. Jørg. (Jørgensen 2000c)  
**praetermissa** (Nyl.) P. M. Jørg. Syns.: *Pannaria praetermissa*, *Parmeliella praetermissa*, *P. lepidiota*  
**pulveracea** (P. M. Jørg. & Henssen) P. M. Jørg. Syn.: *Pannaria pulveracea*  
**ramulina** P. M. Jørg. & Tønsberg (Jørgensen 2000c)  
**sorediata** P. M. Jørg. (Jørgensen 2000b)  
**thiersii** P. M. Jørg. (Jørgensen 2000c)  
**viridescens** P. M. Jørg. & Zhurb. (Jørgensen & Zhurbenko 2002)  
**californica** (Tuck.) P. M. Jørg. (Jørgensen 2000c) = *Vahliella californica*  
**globigera** Fryday & P. M. Jørg. (Fryday 2004a) = *Vahliella globigera*  
**hookerioides** P. M. Jørg. (Jørgensen 2000c) = *Vahliella hookerioides*  
**labrata** P. M. Jørg. (Jørgensen 2005) = *Vahliella labrata*  
**leucophaea** (Vahl) P. M. Jørg. = *Vahliella leucophaea*  
**saubinetii** (Mont.) P. M. Jørg. = *Vahliella saubinetii*

#### **GABURA** Adanson

**fasciculare** (L.) P. M. Jørg. (Jørgensen 2014) Syns.: *Collema fasciculare*, *Synechoblastus aggregatus*, *S. fascicularis*

#### **GAMUNDIA** Raithelh.

\***leucophylla** (Gillet) H. E. Bigelow Syn.: *Fayodia leucophylla* (Bigelow 1983)  
 \***striatula** (Kühner) Raitelh. Syn.: *Fayodia striatula* (Raitelhuber 1983)

#### **GASPARRINIA** Tornab. = **CALOPLACA**

#### **GASSICURTIA** Fée

**catasema** (Tuck.) Marbach Syn.: *Buellia catasema*, *B. caloosensis* (Marbach 2000)  
**coccinea** Fée Syn.: *Buellia coccinea* (Marbach 2000)  
**subpulcella** (Vainio) Marbach Syn.: *Buellia subpulcella*, *B. pachnidisca* (Marbach 2000)  
**verncoma** (Tuck.) Marbach Syn.: *Buellia verncoma*, *Buellioopsis verncoma*, *Lecidea verncoma* (Marbach 2000)  
**elizae** (Tuck.) Marbach (Marbach 2000) = *Buellia elizae* (Lendemer et al. 2013)

#### **GEISLERIA** Nitschke (Aptroot et al. 2014)

**sychnogonioides** Nitschke Syn.: *Strigula sychnogonioides*

#### **GELATINOPSIS** Rambold & Triebel

#**geoglossi** (Ellis & Everh.) Rambold & Triebel (Diederich et al. 2010)  
 \***acarosporicola** Kocourk. & K. Knudsen (Kocourková & Knudsen 2009a) = *Llimoniella acarosporicola*

#### **GELTINGIA** Alstrup & D. Hawksw.

\***associata** (Th. Fr.) Alstrup & D. Hawksw. Syn.: *Lecidea associata*

#### **GLAUCOMARIA** M. Choisy

**rupicola** (L.) M. Choisy = *Lecanora rupicola*  
**sordida** (Pers.) Th. Fr. = *Lecanora rupicola*



- GLAUCOTREMA** Rivas Plata & Lumbsch (Rivas Plata et al. 2012)  
**glaucophaenum** (Kremp.) Rivas Plata & Lumbsch Syns.: Myriotrema glaucophaenum, Ocellularia glaucophaena Presence in N.A. is doubtful
- GLOBOSPHAERIA** D. Hawksw.  
 \***jamesii** D. Hawksw. (Diederich 2003)
- GLOEOHEPPIA** Gyelnik  
**polyspora** Henssen (Schultz 2002c)  
**squamulosa** (Zahlbr.) M. Schultz Syn. : Psorotichia squamulosa (Schultz 2007b)
- GLYPHIS** Ach.  
**atrofusca** (Müll. Arg.) Lücking (Lücking et al. 2011b)  
**cicatricosa** Ach.  
**scyphulifera** (Ach.) Staiger Syn.: Gyrostomum scyphuliferum (Staiger 2002, Lücking et al. 2011b)  
**substriatula** (Nyl.) Staiger Syn.: Graphina substriatula (Staiger 2002, Tripp et al. 2010)  
 achariana Tuck. = G. cicatricosa  
 confluens Zenker = G. cicatricosa  
 favulosa Ach. = G. cicatricosa
- GLYPHOLECIA** Nyl.  
**scabra** (Pers.) Müll. Arg. Syns.: Acarospora rhagadiosa, A. scabra, A. saxicola
- GOMPHILLUS** Nyl.  
**americanus** Essl.  
**calycioides** (Duby) Nyl. (Buck 1998)
- GONGYLIA** Körber  
 muscorum Zschacke (North American only) = Protothelenella pluriseptata (Fryday 2004b)  
 nadvornikii Servít = Segestria mammillosa, but a misidentification for North America (Fryday 2004b)
- GONOHYMENIA** J. Steiner = LICHINELLA  
 cribellifera (Nyl.) Henssen = Lichinella cribellifera  
 melamphylla (Tuck.) Henssen = Lichinella melamphylla  
 minnesotensis (Fink) Henssen = Lichinella minnesotensis  
 nigritella (Lettau) Henssen = Lichinella nigritella
- GOWARDIA** P. Halonen, L. Myllys, S. Velmala, & H. Hyvärinen (Halonen et al. 2009, Myllys et al. 2014)  
**arctica** P. Halonen, L. Myllys, S. Velmala, & H. Hyvärinen Syn.: Alecatoria gowardii  
**nigricans** (Ach.) P. Halonen, L. Myllys, S. Velmala, & H. Hyvärinen Syn.: Alecatoria nigricans
- GRANULOPYRENIS** Aptroot  
**hymnothora** (Ach.) Aptroot Syns.: Verrucaria hymnothora, Microthelia hymnothora, Sphaeria bignoniae
- GRAPHINA** Müll. Arg. = GRAPHIS (Lücking et al. 2007; Tripp et al. 2010)  
 abaphoides (Nyl.) Müll. Arg. = Acanthothecis leucopetra  
 acharii (Fée) Müll. Arg. = Graphis acharii  
 acrophaea Müll. Arg. = Graphis parilis  
 adscribens (Nyl.) Müll. Arg. = Fissurina scolecitis for North American records  
 anguina (Mont.) Müll. Arg. = Thalloloma anguinum  
 antillarum (Vainio) Zahlbr. = Graphis antillarum  
 babingtonii (Mont.) Zahlbr. = Fissurina insculpta  
 colliculosa (Mont.) Hale = Platythecium colliculosum  
 columbina (Tuck.) M. Wirth & Hale = Fissurina columbina

cypressi Müll. Arg. = Fissurina cypressi  
 dimidiata (Vainio) Zahlbr. = misidentification for North America  
 dumastioides (Fink) ined. = Fissurina dumastioides  
 floridana (Tuck.) R. C. Harris = Platythecium floridanum  
 glaucoderma (Nyl.) Müll. Arg. = Fissurina incrustans  
 incrustans (Fée) Müll. Arg. = Fissurina incrustans  
 intertexta (Müll. Arg.) R. C. Harris = Acanthothecis aurantiaca  
 leprocarpa (Nyl.) Zahlbr. = Chapsa leprocarpa  
 marcescens (Fée) Müll. Arg. = Carbacanthographis marcescens  
 mendax (Nyl.) Müll. Arg. = misidentification for North America  
 nitidescens (Nyl.) Riddle = Fissurina nitidescens  
 leuconephela (Nyl.) Zahlbr. = Fissurina leuconephela  
 parilis (Kremp.) Müll. Arg. = Graphis parilis  
 peplophora M. Wirth & Hale = Acanthothecis peplophora  
 platycarpa (Eschw.) Zahlbr. = misidentification for North America  
 platyleuca (Nyl.) Zahlbr. (Harris 1995a) = Diorygma pruinsum  
 plittii Zahlbr. = Carbacanthographis marcescens  
 scolecitis (Tuck.) Fink = Fissurina scolecitis  
 sophisticascens (Nyl.) Zahlbr. = Graphis sophisticascens  
 subnitida (Nyl.) Zahlbr. = Fissurina subnitida  
 subnitidula (Nyl.) Zahlbr. = Fissurina subnitidula  
 substriatula (Nyl.) Zahlbr. = Glyphis substriatula  
 subvirginalis (Nyl.) Müll. Arg. = Acanthothecis mosquitensis  
 virginalis (Nyl.) Müll. Arg. = Fissurina columbina  
 virginea (Eschw.) Müll. Arg. = Diorygma poitaei  
 xylophaga R. C. Harris = Graphis xylophaga

#### **GRAPHIS Adanson**

**acharii** Fée Syn. Graphina acharii Presence in N. Am. uncertain (Tripp et al. 2010)  
**analoga** Nyl. (Seavey & Seavey 2011)  
**anfractuosa** Eschw.  
**antillarum** Vainio Syn.: Graphina antillarum  
**aperiens** Müll. Arg.  
**appendiculata** Common & Lücking (Lücking et al. 2011b)  
**argentata** Lücking & Umaña (Lücking et al. 2011b)  
**assimilis** Nyl. (Lücking et al. 2011b)  
**botryosa** Tuck.  
**brittoniae** F. Seavey & J. Seavey (Seavey & Seavey 2011)  
**caesiella** Vainio  
**caesiocarpa** Redinger (Lücking et al. 2011b)  
**caribica** Lücking (Lücking et al. 2011b)  
**chlorotica** A. Massal. (Seavey & Seavey 2011)  
**chromothecia** R. C. Harris  
**cincta** (Pers.) Aptroot (Seavey & Seavey 2011)  
**conferta** Zenker (Lücking et al. 2011b)  
**crebra** Vainio (Seavey & Seavey 2011)  
**cupei** Vainio ex Lücking (Lücking et al. 2011b)  
**dendrogramma** Nyl. (Seavey & Seavey 2011)  
**desquamescens** (Fée) Zahlbr.  
**disserpens** Nyl. (Lücking et al. 2011b)  
**elegans** (Borrer ex Sm.) Ach.  
**elevata** F. Seavey & J. Seavey (Seavey & Seavey 2011)  
**endoxantha** Nyl. (Lücking 2009)  
**eulectra** Tuck. Syn.: Phaeographis eulectra  
**filiformis** Adaw. & Makhija (Seavey & Seavey 2011)  
**furcata** Fée (Seavey & Seavey 2011)



**glauescens** Fée  
**haleana** R. C. Harris  
**handelii** Zahlbr. (Lücking et al. 2011b)  
**hinnulea** F. Seavey & J. Seavey (Seavey & Seavey 2011)  
**hodgesiana** Lendemer (Lendemer 2010b)  
**hyphosa** Staiger (Lendemer 2010b)  
**intermedians** Vainio (Lendemer 2010b)  
**intricata** Fée  
**inversa** R. C. Harris  
**leptocarpa** Fée  
**leptoclada** Müll. Arg  
**librata** C. Knight  
**lineola** Ach.  
**longula** Kremp. (Lücking et al. 2011b)  
**lucifica** R. C. Harris  
**lumbricina** Vainio  
**modesta** Zahlbr. (Seavey & Seavey 2011)  
**neolongata** Lücking (Seavey & Seavey 2011)  
**oshioi** M. Nakan. (Lücking et al. 2011b)  
**oxyclada** Müll. Arg. (Lücking et al. 2011b)  
**paralleloides** M. Cáceres & Lücking (Seavey et al. 2014)  
**parilis** Kremp. Syn.: *Graphina parilis* (Lücking et al. 2008)  
**pavoniana** Fée North American reports uncertain (Lendemer 2010b)  
**pergracilis** (Zahlbr.) Lücking & A. W. Archer (Lücking & McCune 2012)  
**pinicola** Zahlbr. (Lendemer 2010b)  
**platycarpella** Müll. Arg.  
**proserpens** Vainio (Tucker 1981)  
**pseudocinerea** Lücking (Lücking et al. 2011b)  
**pyrrhocheiloides** Zahlbr. (Seavey et al. 2014)  
**renschiana** (Müll. Arg.) Stizenb. (Seavey & Seavey 2011)  
**rimulosa** (Mont.) Trevisan  
**sauroidea** Leighton (Lücking et al. 2011b)  
**saxorum** Egea & Torrente (Egea & Torrente 1997)  
**schiffneri** Zahlbr. (Seavey et al. 2014)  
**scripta** (L.) Ach.  
**sophisticascens** (Nyl.) Zahlbr. (Harris & Ladd 2005; Tripp et al. 2010)  
**stellata** M. Cáceres & Lücking (Lücking et al. 2011b)  
**sterlingiana** E. Tripp & Lendemer (Lendemer et al. 2013)  
**striatula** (Ach.) Sprengel  
**subamylacea** Zahlbr.  
**subflexibilis** Lücking & Chaves (Lücking et al. 2011b)  
**supracola** A. W. Archer (Seavey & Seavey 2011)  
**tamiamiensis** Lendemer (Lendemer 2010b)  
**tenella** Ach.  
**xanthospora** Müll. Arg. (Lücking et al. 2011b)  
**xylophaga** (R. C. Harris) Lendemer Syn.: *Graphina xylophaga* (Lendemer & Knudsen 2008b)  
**afzelii** Ach. = *Dyplolabia afzelii*  
**amicta** Nyl. (1935) = *Carbacanthographis amicta* (Nyl.) Staiger & Kalb (Staiger 2002) Probable misidentification for North America (Esslinger & Tucker 2009)  
**anguilliformis** Taylor (Fink 1935) Identity uncertain; probable misidentification for North America (Esslinger & Tucker 2009)  
**atorubens** Tuck. ex Fink = *Dimidiographa longissima*  
**balbisina** Nyl. (Fink 1935) = *G. implicata* Fée Probable misidentification for North America (Esslinger & Tucker 2009)  
**beaumontii** Tuck. = *Fissurina insidiosa*  
**candidata** Nyl. = *Carbacanthographis candidata*

celtidis Müll. Arg. = *G. librata*  
 cinerea Fée (Fink 1935) Probable misidentification for North America (Esslinger & Tucker 2009)  
 dendritica (Ach.) Ach. (Mohr 1901) = *Phaeographis dendritica*  
 diversa Nyl. (Fink 1935) = *Leiorreuma exaltata* (Zahlbruckner 1924, Staiger 2002)  
 dumastii (Fée) Sprengel (Fink 1935) = *Fissurina dumastii* Fée Probable misidentification for North America (Esslinger & Tucker 2009)  
 dumastioides Fink = *Fissurina dumastioides*  
 floridana Tuck. = *Platythecium floridanum*  
 grammatis Fée = *Platythecium grammitis*  
 illiterata R. C. Harris = *Fissurina illiterata*  
 incrustans = *Fissurina incrustans*  
 insidiosa (C. Knight & Mitten) Hooker f. = *Fissurina insidiosa*  
 intertexta Müll. Arg. = *Acanthothecis aurantiaca*  
 inustula Stirton (Stirton 1875) = *Thalloloma anguinum*  
 lactea (Fée) Sprengel (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)  
 leucopepla Tuck. = *Acanthothecis leucopepla*  
 marcescens = *Carbacanthographis marcescens*  
 mosquitensis Tuck. = *Acanthothecis mosquitensis*  
 nitida (Eschw.) Tuck. = *Medusulina nitida*  
 nitidescens Nyl. = *Fissurina nitidescens*  
 poitaeoides Nyl. = *Acanthothecis poitaeoides*  
 radiata (Mont.) Nyl. (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)  
 rigidula Müll. Arg. (Lendemer & Yahr 2004) = *G. leptoclada* (Lücking 2009)  
 ramificans Nyl. (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)  
 rufula Mont. = *Fissurina rufula*  
 sculpturata Ach. (Mohr 1901) = *Phaeographis sculpturata*  
 scolecitis Tuck. = *Fissurina scolecitis*  
 scripta var. varia Ach. (Fink 1935) = *G. scripta*  
 subdiversa Nyl. (Fink 1935) a nomen nudum; identity uncertain  
 subelegans Nyl. = *G. endoxantha* (Lücking 2009)  
 subnitidula Nyl. = *Fissurina subnitidula*  
 subparilis Nyl. = *Fissurina rufula*  
 turbulenta Nyl. = *Anomomorpha turbulenta*

#### **GRAPHIUM** Corda

\***aphthosae** Alstrup & D. Hawksw. (Esslinger & Egan 1995)

#### **GYALECTA** Ach.

**erythrozona** Lettau  
**carneola** (Ach.) Hellbom Syns. *Pachyphiale carneola* (Baloch et al. 2013a)  
**fagicola** (Hepp ex Arnold) Kremp. Syns.: *Pachyphiale fagicola* (Baloch et al. 2013a)  
**flotowii** Körber  
**foveolaris** (Ach.) Schaerer  
**friesii** Flotow ex Körber  
**geoica** (Wahlenb. ex Ach.) Ach. Syn.: *Secoliga geoica*  
**gyalizella** (Nyl.) Baloch & Lücking Syn.: *Pachyphiale gyalizella* (Baloch et al. 2013a)  
**herrei** Vězda  
**jenensis** (Batsch) Zahlbr.  
**kukriensis** (Räsänen) Räsänen  
**obesipora** R. C. Harris & Lendemer (Lendemer et al. 2013a)  
**peziza** (Mont.) Anzi  
**russula** (Körber ex Nyl.) Baloch, Lumbsch & Wedin Syns.: *Belonia fennica*, *B. russula* (Baloch et al. 2013a)  
**truncigena** (Ach.) Hepp  
*carneolutea* (Turner) H. Olivier = *Cryptolechia carneolutea*  
*cupularis* (Hedwig) Schaerer = *G. jenensis*



farlowii Tuck. ex Nyl. = Petractis farlowii  
lamprospora Nyl. = Bactrospora lamprospora  
lutea (Dickson) Tuck. = Coenogonium luteum  
odora Ach. (Fink 1935) = Ionaspis odora  
radiatilis Tuck. = Skyttea radiatilis

**GYALECTARIA** Schmitt, Kalb & Lumbsch (Schmitt et al. 2010)

**diluta** (Björk, G. Thor & T. B. Wheeler) Schmitt, T. Sprib. & Lumbsch (Schmitt et al. 2010)

**GYALECTIDIUM** Müll. Arg.

**appendiculatum** Lücking, Lendemer & E. Tripp (Lücking et al. 2007, Lendemer & Tripp 2008)

**catenulatum** (Cavalc. & A. A. Silva) L. I. Ferraro, Lücking & Sérus. (Lücking et al. 2007)

**filicinum** Müll. Arg.

**floridense** Safranek & Lücking (Safranek & Lücking 2005)

**imperfectum** Vězda (Ferraro, Lücking & Sérusiaux 2001)

**paolae** [Herrera-Campos & Lücking \(Sanders & de los Ríos 2015\)](#)

**tuckerae** Lücking & Lendemer (Lücking et al. 2007)

**ulloae** Herrera-Campos & Lücking (Lücking et al. 2011b)

**viride** Lücking, W. R. Buck & Rivas Plata (Lücking et al. 2007)

**yahriae** W. R. Buck & Sérus. (Buck & Sérusiaux 2000)

rotuliforme Müll. Arg. = Asterothyrium rotuliforme

**GYALECTINA** Vězda = CRYPTOLECHIA

carneolutea (Turner) Vězda = Cryptolechia carneolutea

**GYALIDEA** Lettau ex Vězda

**asteriscus** (Anzi) Aptroot & Lücking (Aptroot & Lücking 2003) Syn.: Solorinella asteriscus

**fritzei** (Stein) Vězda (Hutten et al. 2013)

**hyalinescens** (Nyl.) Vězda

**lecideopsis** (A. Massal.) Lettau ex Vězda

**lecideopsis** var. **eucarpa** (Servít) Vězda

**lecideopsis** var. **kurdistanica** (J. Steiner) Vězda

**roseola** (Arnold) Lettau (Brodo 1995)

dodgei Vězda = G. hyalinescens

lecideopsis var. convarians (Nyl.) Vězda = G. lecideopsis var. eucarpa

**GYALIDEOPSIS** Vězda

**africana** Kalb & Vězda (Lücking et al. 2007)

**americana** Lücking & W. R. Buck (Lücking et al. 2007)

**berenice** (Ellis & Everh.) Lücking & W. R. Buck

**buckii** Lücking, Sérus. & Vězda (Lücking et al. 2007) Syn.: Tricharia vezdae

**epicorticis** (A. Funk) Tønsberg & Vězda (Lücking et al. 2007) Syn.: Microlychnus epicorticis

**floridae** Etayo & Diederich (Etayo & Diederich 2001)

**helvetica** van den Boom & Vězda (Spribille & Björk 2008)

**lambinonii** Vězda (Lücking et al. 2007)

**macarthurii** Lücking, Umaña & Aptroot (Lücking et al. 2007)

**mexicana** Tretiach, Giralt & Vězda (Lendemer 2011a)

**moodyae** Lendemer & Lücking (Lendemer & Lücking 2004)

**ozarkensis** Lücking, W. R. Buck & R. C. Harris (Lücking et al. 2007)

**piceicola** (Nyl.) Vězda

**sessile** [W. B. Sanders & Lücking \(Sanders & Lücking 2015\)](#)

**subaequatoriana** Lücking & W. R. Buck (Lücking et al. 2007)

**submonospora** Lücking & W. R. Buck (Lücking et al. 2007)

**vainioi** Kalb & Vězda var. **semicirculata** Lücking & W. R. Buck (Lücking et al. 2007)

**vainioi** Kalb & Vězda var. **vainioi**

**wesselsii** Lücking, Sipman & Chaves (Lücking et al. 2007)

alnicola W. Noble & Vězda = *G. piceicola*  
anastomosans P. James & Vězda = *Jamesiella anastomosans*  
athalloides (Nyl.) Vězda = *Diploschistella athalloides*  
musciicola P. James & Vězda (Tønsberg 1997) = misidentification of *G. moodyae* (Lücking et al. 2007)

**GYALOLECHIA** A. Massal. (Arup et al. 2013)

**bracteata** (Hoffm.) A. Massal. subsp. **bracteata** Syn.: *Caloplaca bracteata*, *Fulgensia bracteata*  
**bracteata** subsp. **bracteata** var. **alpina** (Th. Fr.) ined. Syn.: *Fulgensia bracteata* subsp. *bracteata* var. *alpina*  
**bracteata** subsp. **deformis** (Poelt) ined. Syn.: *Fulgensia bracteata* subsp. *deformis*  
**desertorum** (Tomin) Söchting, Frödén & Arup Syn.: *Fulgensia desertorum*  
**epiphyta** (Lyngby) Vondrák Syn.: *Caloplaca arizonica*, *C. epiphyta* (Vondrák et al. 2016)  
**flavorubescens** (Hudson) Söchting, Frödén & Arup Syn.: *Caloplaca aurantiaca*, *C. flavorubescens*  
**flavovirescens** (Wulfen) Söchting, Frödén & Arup Syn.: *Caloplaca erythrella*, *C. flavovirescens*  
**fulgens** (Sw.) Söchting, Frödén & Arup Syn.: *Caloplaca fulgens*, *Fulgensia fulgens*, *Placodium fulgens*  
**persimilis** (Wetmore) Söchting, Frödén & Arup Syn.: *Caloplaca persimilis*  
**stantonii** (W. A. Weber ex Arup) Söchting, Frödén & Arup Syn.: *Caloplaca stantonii*  
**stipitata** (Wetmore) Söchting, Frödén & Arup Syn.: *Caloplaca stipitata*  
**subbracteata** (Nyl.) Söchting, Frödén & Arup Syn.: *Fulgensia subbracteata*  
**xanthostigmoidea** (Räsänen) Söchting, Frödén & Arup Syn.: *C. discolor*, *C. xanthostigmoidea*  
**arizonica** (H. Magn.) Söchting, Frödén & Arup = *G. epiphyta* (Vondrák et al. 2016)

**GYMNODERMA** Nyl.

**lineare** (A. Evans) Yoshim. & Sharp = *Cetradonia linearis*

**GYPSOPLACA** Timdal

**macrophylla** (Zahlbr.) Timdal

**GYROGRAPHA** Ertz & Tehler (Ertz et al. 2015b)

**gyrocarpa** (Flotow) Ertz & Tehler Syn.: *Opegrapha gyrocarpa* (Ertz et al. 2015b)

**GYROPHORA** Ach. = **UMBILICARIA**

**angulata** (Tuck.) Herre = *Umbilicaria angulata*  
**anthracina** (Wulfen) Körber = *Umbilicaria rigida*  
**arctica** Ach. = *Umbilicaria arctica*  
**cylindrica** (L.) Ach. = *Umbilicaria cylindrica*  
**decussata** (Vill.) Zahlbr. = *Umbilicaria decussata*  
**deusta** (L.) Ach. = *Umbilicaria deusta*  
**dillenii** (Tuck.) Müll. Arg. = *Umbilicaria mammulata*  
**erosa** (G. Weber) Ach. = *Umbilicaria torrefacta*  
**flocculosa** (Wulfen) Turner & Borrer = *Umbilicaria deusta*  
**grisea** Swartz (Fink 1935) = *Umbilicaria grisea* Hoffm. = misidentification for North America (Esslinger & Tucker 2009)  
**hyperborea** Ach. = *Umbilicaria hyperborea* var. *hyperborea*  
**muhlenbergii** Ach. = *Umbilicaria muhlenbergii*  
**phaea** (Tuck.) Nyl. = *Umbilicaria phaea*  
**polyphylla** (L.) Funck = *Umbilicaria polyphylla*  
**polyrrhiza** (L.) Körber = *Umbilicaria polyrrhiza*  
**proboscidea** (L.) Ach. (Fink 1935) = *Umbilicaria proboscidea*  
**rugifera** (Nyl.) Th. Fr. (Fink 1935) = *Umbilicaria virginis* (Llano 1950)  
**torrefacta** (Lightf.) Cromb. (Fink 1935) = *Umbilicaria torrefacta*  
**vellea** (L.) Ach. = *Umbilicaria vellea*

**GYROSTOMUM** Fr.

**curtisii** Tuck. (Fink 1935) = *Baculifera curtisii*  
**scyphuliferum** (Ach.) Nyl. = *Glyphis scyphuliferum*



## **HAEMATOMMA** A. Massal.

- accolens** (Stirton) Hillm. (Staiger & Kalb 1995)
- americanum** Kalb & Staiger (Staiger & Kalb 1995)
- fenzlianum** A. Massal. (Staiger & Kalb 1995)
- flexuosum** Hillm. (Staiger & Kalb 1995)
- guyanense** Kalb & Staiger (Brodo et al. 2008)
- leprarioides** (Vainio) Vainio (Brodo et al. 2008)
- ochroleucum** (Necker) J. R. Laundon var. **ochroleucum**
- ochroleucum** (Necker) J. R. Laundon var. **porphyrium** (Pers.) J. R. Laundon Syn.: *H. porphyrium*
- persoonii** (Fée) A. Massal. (Staiger & Kalb 1995)
- rufidulum** (Fée) A. Massal. (Staiger & Kalb 1995)
- caesium* Coppins & P. James = *Mycoblastus caesius*
- californicum* Sigal & D. Toren = *Ophioparma rubricosa* (Ekman 1996)
- cismonicum* Beltr. = *Loxospora cismonica*
- coccineum* (Dickson) Körber = misidentification for North America
- elatinum* (Ach.) A. Massal. = *Loxospora elatina*
- lapponicum* Räsänen = *Ophioparma lapponica*
- ochrophaeum* (Tuck.) A. Massal. = *Loxospora ochrophaea*
- pacificum* Hasse = *Ophioparma rubricosa* (Staiger & Kalb 1995, Ekman 1996)
- porphyrium* (Pers.) Zopf = *H. ochroleucum* var. *porphyrium*
- puniceum* (Sw.) A. Massal. North American records are *H. persoonii*
- pustulatum* Brodo & W. L. Culb. = *Variolaria pustulata*
- rappii* Zahlbr. = *Schismatomma rappii*
- subpuniceum* (Fée) B. de Lesd. = *H. fenzlianum*
- ventosum* (L.) A. Massal. = *Ophioparma ventosa*

## **HAFELLIA** Kalb, H. Mayrhofer & Scheid. = *Buellia* (Nordin & Tibell 2005)

- arnoldii** (Servit) Hafellner & Türk = *Buellia arnoldii*
- bahiana** (Malme) Sheard = *Buellia bahiana*
- bahiana** var. **pleiotropa** (Malme) Sheard = *Buellia bahiana* var. **pleiotropa**
- callispora** (C. Knight) H. Mayrhofer & Sheard = *Buellia callispora*
- curatellae** (Malme) Marbach (Marbach 2000) = *Buellia curatellae*
- disciformis** (Fr.) Marbach & H. Mayrhofer = *Buellia disciformis*
- fosteri** Imshaug & Sheard = a species of *Buellia*
- parastata** (Nyl.) Kalb = *Buellia parastata*
- pleiotera** (Malme) Marbach (Hansen et al. 2008) = *Buellia pleiotera*

## **HAFELLNERA** Houmeau & Cl. Roux

- parasemella** (Nyl.) Houmeau & Cl. Roux = *Schaereria parasemella*

## **HALECANIA** M. Mayrhofer

- alpivaga** (Th. Fr.) M. Mayrhofer Syns.: *Lecania alpivaga*, *L. disceptans*, *L. thallophila*, *Lecanora disceptans*
- australis** Lumbsch (van den Boom & Ryan 2004a)
- pepegospora** (H. Magn.) van den Boom (van den Boom & Elix 2005) Syn.: *Lecania pepegospora*
- viridescens** Coppins & P. James

## **HALEGRAPHIA** Rivas Plata & Lücking (Lücking et al. 2011a, 2011b)

- floridana** Common & Lücking

## **HALOSPORA** (Zschacke) Tomas. & Cif.

- \***discrepans** (J. Lahm ex Arnold) Hafellner (Dillman et al. 2012)

**HARPIDIUM** Körber

**nashii** Scheid. (Schultz et al. 2000)  
glaucophanum (Hasse) Hasse = Rhizoplaca glaucophana

**HASSEA** Zahlbr.

\***bacillosa** (Nyl.) Zahlbr. = Sarcopyrenia bacillosa

**HAZSLINSZKYA** Körber (Ertz & Diederich 2015)

**gibberulosa** (Ach.) Körber Misidentifications for North America (Perlmutter et al. 2015)

**HAWKSWORTHIANA** U. Braun

\***peltigericola** (D. Hawks.) U. Braun

**HEIOMASIA** Nelsen, Lücking & Rivas Plata (Nelsen & Lücking 2010 [2011])

**seaveyorum** Nelsen & Lücking

**HELMINTHOCARPON** Fée

**leprevostii** Fée

**HELOCARPON** Th. Fr.

**crassipes** Th. Fr. Syns.: Lecidea crassipes, Micarea crassipes  
**lesdainii** (Zahlbr.) Breuss (Breuss 2001)  
corticola Breuss (Etayo 1998) = H. lesdainii

**HENRICA** B. de Lesd.

**americana** Breuss (Breuss 2002c)  
**melaspora** (Taylor) Savić & Tibell Syn.: Polyblastia melaspora (Savić & Tibell 2008)

**HEPPIA** Nägeli

**adglutinata** (Kremp.) A. Massal.  
**conchiloba** Zahlbr.  
**despreauxii** (Mont.) Tuck. (Büdel et al. 2002) Syns.: Anema dodgei, Solorinaria despreauxii (Schultz 2007b)  
**lutosa** (Ach.) Nyl.  
alumenensis Herre Excluded from North American flora; type not found.  
bolanderi (Tuck.) Vainio = Peltula bolanderi  
deserticola Zahlbr. = Peltula obscurans var. deserticola  
euploca (Ach.) Vainio = Peltula euploca  
guepinii (Delise) Nyl. = Peltula euploca  
hassei Zahlbr. = Peltula obscurans var. hassei  
leptopholis Nyl. ex Hasse = Peltula patellata  
macrospora B. de Lesd. = H. conchiloba  
placodizans Zahlbr. = Peltula placodizans.  
planescens Nyl. Excluded from North American flora; type not found.  
polyphylla B. de Lesd. = Peltula euploca  
polyspora Tuck. = Peltula patellata  
psammophila Nyl. = misidentification for North America  
richardsii Herre = Peltula richardsii  
terrena Nyl. ex Hasse = Peltula patellata  
tortuosa (Nees) Vainio = Peltula tortuosa  
virescens (Despr.) Nyl. = H. lutosa  
zahlbruckneri Hasse = Peltula zahlbruckneri

**HERPOTHALLON** Tobler (Aptroot et al. 2009)

**echinatum** Aptroot, Lücking & Will-Wolf (Lücking et al. 2011b)  
**hyposticticum** F. Seavey & J. Seavey (Seavey & Seavey 2014a)



**rubrocinctum** (Ehrenb.: Fr.) Aptroot, Lücking & G. Thor Syns. *Cryptothecia rubrocincta*, *C. sanguineum*  
**rubroechinatum** Frisch & G. Thor (Frisch et al. 2010)  
**antillarum** (Vainio) Aptroot, Lücking & G. Thor (Lücking et al. 2011b) = *Diorygma antillarum*

**HERTELIANA** P. James

**alaskensis** (Nyl.) S. Ekman Syns.: *Bacidia alaskensis*, *Lecidea alaskensis* (Ekman 1996)

**HERTELIDEA** Printzen & Kantvilas (Printzen & Kantvilas 2004)

**botryosa** (Fr.) Printzen & Kantvilas Syns.: *Biatora botryosa*, *Lecidea botryosa* (Printzen & Kantvilas 2004)

**pseudobotryosa** R. C. Harris, Ladd & Printzen (Printzen & Kantvilas 2004)

**HETEROCARPON** Müll. Arg.

**\*ochroleucum** (Tuck.) Müll. Arg. Syn.: *Endocarpon ochroleucum*

**HETEROCYPHELIUM** Vainio

**leucampyx** (Tuck.) Vainio

**HETERODERMIA** Trevisan

**albicans** (Pers.) Swinscow & Krog Syns.: *Anaptychia domingensis*, *A. ravenelii*

**appalachensis** (Kurok.) W. L. Culb. Syn.: *Anaptychia appalachensis*

**boryi** (Fée) K. P. Singh & S. R. Singh Syns.: *Anaptychia boryi*, *A. neoleucomelaena*

**casarettiana** (A. Massal.) Trevisan Syn.: *Anaptychia casarettiana*

**chondroidea** W. A. Weber & D. D. Awasthi Syn.: *Anaptychia chondroidea*

**comosa** (Eschw.) Follm. & Redón (Harris 1995b) Syn.: *Physcia comosa*

**crocea** R. C. Harris North American reports of *H. corallophora* belong here

**dendritica** (Pers.) Poelt Syn.: *Anaptychia dendritica*

**diademata** (Taylor) D. D. Awasthi Syn.: *Anaptychia diademata*

**echinata** (Taylor) W. L. Culb. Syn.: *Anaptychia echinata*

**erecta** Lendemer (Lendemer 2009a)

**erinacea** (Ach.) W. A. Weber Syn.: *Anaptychia erinacea*

**galactophylla** (Tuck.) W. L. Culb. Syns.: *Anaptychia comosa* (for North American records), *A. galactophylla*

**granulifera** (Ach.) W. L. Culb. Syn.: *Anaptychia granulifera*

**hypoleuca** (Muhl.) Trevisan Syn.: *Anaptychia hypoleuca*

**japonica** (M. Satô) Swinscow & Krog

**leucomela** (L.) Poelt Syn.: *Anaptychia "leucomelaena"*

**microphylla** (Kurok.) Skorepa Questionable for N. America (Lendemer 2009a)

**namaquana** Brusse (Esslinger & Bratt 1998)

**neglecta** Lendemer, R. C. Harris & E. Tripp (Lendemer et al. 2007)

**obscurata** (Nyl.) Trevisan Syns.: *Anaptychia heterochroa*, *A. hypoleuca* var. *colorata*, *A. obscurata*, *A. sorediifera*

**palpebrata** (Taylor) Vainio (Moberg 2011)

**podocarpa** (Bél.) Awasthi (Moberg & Nash 1999)

**pseudospeciosa** (Kurok.) W. L. Culb. Syn.: *Anaptychia pseudospeciosa*

**rugulosa** (Kurok.) Wetmore

**sitchensis** Goward & W. Noble

**speciosa** (Wulfen) Trevisan Syns.: *Anaptychia pseudospeciosa* var. *tremulans*, *A. speciosa*

**squamulosa** (Degel.) W. L. Culb. Syn.: *Anaptychia squamulosa*

**tropica** (Kurok.) Sipman Syn.: *Anaptychia tropica* (Marcano et al. 1996)

**barbifera** (Nyl.) K. P. Singh = misidentification for N.A. (Lendemer 2009a)

**corallophora** (Taylor) Skorepa = *H. crocea* for North American reports

**domingensis** (Ach.) Trevisan = *H. albicans*

**leucomelaena** (L.) Poelt = *H. leucomela*

**neoleucomelaena** (Kurok.) Follmann & Redón = *H. boryi*

propagulifera (Vainio) J. P. Dey = misidentification for North America, mostly *H. neglecta* (Lendemer et al. 2007)  
tremulans (Müll. Arg.) W. L. Culb. = *H. speciosa*

#### **HETEROPLACIDIUM** Breuss (Breuss 1996)

#**compactum** (A. Massal.) Gueidan & Cl. Roux (Prieto et al. 2012) Syn.: *Catapyrenium compactum*, *Dermatocarpon compactum*, *Verrucaria compacta*  
**congestum** (Breuss & McCune) Breuss Syn.: *Catapyrenium congestum*  
#**transmutans** K. Knudsen, Breuss & Kocourk. (Knudsen et al. 2014a)  
**zamenhofianum** (Clauzade & Cl. Roux) Cl. Roux (Kocourková et al. 2012) Syn.: *Verrucaria zamenhofiana*  
*acarosporoides* (Zahlbr.) Breuss = *Placidium acarosporoides*  
*podolepis* (Breuss) Breuss = *Placidium podolepis*

#### **HETEROTHECIUM** Flotow

*consersum* (Fée) Flotow = *Piccolia conspersa*  
*domingense* (Pers.) Flotow = *Letrouitia domingense*  
*leucoxanthum* (Sprengel) A. Massal. = *Brigantiaea leucoxantha*  
*nannarium* Tuck. = *Piccolia nannaria*  
*pachycheilum* Tuck. = *Megalospora pachycheila*  
*tuberculosum* (Fée) Flotow = *Megalospora tuberculosa*

#### **HOBSONIA** Massee

\**christiansenii* B. L. Brady & D. Hawksw. = *Illosporopsis christiansenii*

#### **HOBSONIOPSIS** D. Hawksw. (Sikaroodi et al. 2001)

\***santessonii** (Lowen & D. Hawksw.) D. Hawksw. (Diederich 2003)

#### **HOMOSTEGIA** Fuckel

\***dermatocarpi** Alstrup & M. S. Cole (Alstrup & Cole 1998)  
\***hertelii** D. Hawksw., V. Atienza & M. Cole (Hawksworth et al. 2004)  
\***piggotii** (Berk. & Broome) P. Karsten (Esslinger & Egan 1995)  
\**parmeliana* (Jacz.) Vouaux (Cole & Hawksworth 2001) Erroneous report based on *H. hertelii* (Hawksworth et al. 2004)

#### **HUBBSIA** W. A. Weber (Tehler et al. 1997)

**californica** (Räsänen) W. A. Weber Syn.: *Reinkella californica*  
*lumbricoides* W. A. Weber = *Schizopelte lumbricoides* (Ertz & Tehler 2011), but not known north of Mexico  
*parishii* (Hasse) Tehler, Loht., Myllys & Sundin = *Schizopelte parishii* (Ertz & Tehler 2011)

#### **HUILIA** Zahlbr. = **PORPIDIA**

*albocaerulescens* (Wulfen) Hertel = *Porpidia albocaerulescens*  
*cinereoatra* (Ach.) Hertel = *Porpidia cinereoatra*  
*crustulata* (Ach.) Hertel = *Porpidia crustulata*  
*elegantior* (H. Magn.) Hertel = *Amygdalaria elegantior*  
*flavocaerulescens* (Hornem.) Hertel = *Porpidia flavicunda*  
*glaucophaea* (Körber) Hertel = *Porpidia rugosa*  
*macrocarpa* (DC.) Hertel = *Porpidia macrocarpa*  
*melinodes* (Körber) Hertel = *Porpidia melinodes*  
*nigrocruenta* (Anzi) Hertel = *Porpidia macrocarpa*  
*panaeola* (Ach.) Hertel = *Amygdalaria panaeola*  
*platycarpoides* (Bagl.) Hertel = *Porpidia platycarpoides*  
*soredizodes* (Lamy ex Nyl.) Hertel = *Porpidia soredizodes*  
*superba* (Körber) Hertel = *Porpidia superba*  
*tuberculosa* (Sm.) P. James = *Porpidia tuberculosa*



**HYALOPEZIZA** Fuckel

\***rapax** Huhtinen (Huhtinen et al. 2008)

**HYDROPUNCTARIA** Keller, Gueidan & Thüs (Gueidan et al. 2009)

**maura** (Wahlenb.) Keller, Gueidan & Thüs Syn.: *Verrucaria maura*

**rheitrophila** (Zschacke) Keller, Gueidan & Thüs Syn.: *Verrucaria kernstockii*, *V. rheitrophila*

**scabra** (Vězda) Keller, Gueidan & Thüs (McCune et al. 2014b)

**HYDROTHYRIA** J. L. Russell = **PELTIGERA**

*venosa* J. L. Russell = *Peltigera hydrothyria*

**HYMENELIA** Kremp.

**arctica** (Lynge) Lutzoni Syn.: *Ionaspis arctica*, *I. epulotica* var. *arctica*

**ceracea** (Arnold) M. Choisy

**cyanocarpa** (Anzi) Lutzoni (Miller et al. 2005)

**epulotica** (Ach.) Lutzoni Syn.: *Ionaspis epulotica*, *Lecanora epulotica*

**heteromorpha** (Kremp.) Lutzoni Syn.: *Ionaspis heteromorpha*, *I. annularis*, *I. ochracella*, *I. reducta*, *I. schismatopis*

**melanocarpa** (Kremp.) Arnold Syn.: *Ionaspis melanocarpa*

**rhodopis** (Sommerf.) Lutzoni Syn.: *Ionaspis ochromicra*, *I. rhodopis*

*lacustris* (With.) M. Choisy = *Ionaspis lacustris*

*ochrolemma* (Vainio) Gowan & Ahti = *Porpidia ochrolemma*

*prevostii* (Duby) Kremp. = *H. epulotica*

**HYPERPHYSCIA** Müll. Arg.

**adglutinata** (Flörke) H. Mayrhofer & Poelt Syn.: *Physcia adglutinata*, *P. elaeina*, *Physciopsis adglutinata*, *P. elaeina*

**confusa** Essl., C. A. Morse & S. Leavitt (Esslinger et al. 2012)

**minor** (Fée) D. D. Awasthi Syn.: *Physcia minor*, *Physciopsis minor*

**pyrithrocardia** (Müll. Arg.) Moberg & Aptroot (Esslinger et al. 2012)

**syncolla** (Tuck. ex Nyl.) Kalb Syn.: *Physcia syncolla*, *Physciopsis syncolla*

**HYPOCENOMYCE** M. Choisy

**scalaris** (Ach. ex Lilj.) M. Choisy Syn.: *Lecidea scalaris*, *L. ostreata*, *Psora scalaris*, *P. ostreata anthracophila* (Nyl.) P. James & Gotth. Schneider (Timdal 2002a) = *Carbonicola anthracophila*

*castaneocinerea* (Räsänen) Timdal = *Carbonicola myrmecina*

*friesii* (Ach.) P. James & Gotth. Schneider = *Xylopsora friesii*

*leucococca* R. Sant. = *Toensbergia leucococca*

*oligospora* Timdal (Timdal 2001) = *Fulgidea oligospora*

*praestabilis* (Nyl.) Timdal = *Pycnora praestabilis*

*sierrae* Timdal (Timdal 2001) = *Fulgidea sierrae*

*sorophora* (Vainio) P. James & Poelt = *Pycnora sorophora*

*xanthococca* (Sommerf.) P. James & Gotth. Schneider = *Pycnora xanthococca*

**HYPOGYMNIA** (Nyl.) Nyl.

**apinnata** Goward & McCune

**austerodes** (Nyl.) Räsänen Syn.: *Parmelia austerodes*

**beringiana** (Krog) McCune (McCune 2008)

**bitteri** (Lynge) Ahti Syn.: *Parmelia bitteri*

**canadensis** Goward & McCune (Goward & McCune 2007)

**castanea** McCune & Krog (McCune 2008)

**dichroma** Goward (Goward et al. 2012)

**duplicata** (Ach.) Rass. Syn.: *Parmelia elongata* (Spribille et al. 2010)

**enteromorpha** (Ach.) Nyl.

**farinacea** Zopf Uncertain for North America (Goward et al. 2012)

**fistulosa** McCune & Krog (McCune 2008)  
**gracilis** McCune (McCune 2002)  
**heterophylla** L. Pike  
**hultenii** (Degel.) Krog Syn.: Cavernularia hultenii (Miądlikowska et al. 2011)  
**imshaugii** Krog  
**inactiva** (Krog) Ohlsson  
**incurvoides** Rass. (McCune et al. 2006)  
**krogiae** Ohlsson  
**lophyrea** (Ach.) Krog Syn.: Cavernularia lophyrea, Parmelia lophyrea (Miądlikowska et al. 2011)  
**lugubris** (Pers.) Krog  
**minilobata** McCune & Schoch (McCune & Schoch 2009)  
**mollis** L. Pike & Hale  
**occidentalis** L. Pike  
**oceanica** Goward  
**physodes** (L.) Nyl. Syn.: Parmelia duplicata var. douglasicola, P. physodes, P. oregana  
**protea** Goward, T. Sprib. & Ahti (Goward et al. 2012)  
**pulverata** (Nyl. ex Crombie) Elix  
**recurva** Goward, Björk, & Hollinger (Goward et al. 2010)  
**rugosa** (G. Merr.) L. Pike  
**salsa** Goward (Goward et al. 2012)  
**schizidiata** McCune (McCune 2002)  
**subcapitata** (Nyl.) Rass.  
**subobscura** (Vainio) Poelt Syn.: Parmelia subobscura  
**subphysodes** (Kremp.) Filson (McCune & Rosentreter 1997)  
**tubulosa** (Schaerer) Hav. Syn.: Parmelia tubulosa  
**verruculosa** Goward (Goward et al. 2012)  
**vittata** (Ach.) Parrique Syn.: Parmelia vittata  
**wilfiana** Goward, T. Sprib. & Ahti (Goward et al. 2010)  
 amplexa Goward, Björk & T. B. Wheeler (Lumbsch et al. 2011) = H. imshaugii (McCune et al. 2011)  
 atrofusca (Schaerer) Räsänen = Brodoa atrofusca, but North American reports are misidentifications  
 bitteriana (Zahlbr.) Räsänen = H. farinacea  
 elongata (Hillm.) Rass. = H. duplicata  
 encausta (Sm.) Walter Watson = Brodoa intestiniformis (but see below)  
 intestiniformis (Vill.) Räsänen = Brodoa intestiniformis, but North American records are misidentifications of, e.g., Brodoa oroarctica  
 metaphysodes (Asahina) Rass. = misidentification for North America (Goward et al. 2010)  
 oroarctica Krog = Brodoa oroarctica  
 pseudophysodes (Asahina) Rass. North American reports are H. oceanica

#### **HYPOTRACHYNA** (Vainio) Hale

**afrorevoluta** (Krog & Swinscow) Krog & Swinscow (Knudsen & Lendemer 2005b)  
**catawbiensis** (Degel.) Divakar, A. Crespo, Sipman, Elix & Lumbsch Syn.: Cetrariastrum catawbiense, Everniastrum catawbiense, Parmelia sorocheila var. catawbiensis  
**costaricensis** (Nyl.) Hale  
**croceopustulata** (Kurok.) Hale Syn.: Parmelia croceopustulata  
**cryptochlora** (Vainio) D. Hawksw. & A. Crespo Syn.: Parmelinopsis cryptochlora (Divakar et al. 2013)  
**dactylifera** (Vainio) Hale (Nash et al. 1998)  
**densirhizinata** (Kurok.) Hale Syn.: Parmelia densirhizinata  
**dentella** (Hale & Kurok.) Hale Syn.: Parmelia dentella  
**ensifolia** (Kurok.) Hale Syn.: Parmelia ensifolia, P. lobulifera var. insensitiva  
**gondylophora** (Hale) Hale Syn.: Parmelia gondylophora  
**horrescens** (Taylor) Krog & Swinscow Syn.: Parmelia horrescens, Parmelina horrescens, Parmelinopsis horrescens (Divakar 2013)  
**imbricatula** (Zahlbr.) Hale Syn.: Parmelia imbricatula, P. lobulifera, P. lobulifera var. luteoreagens  
**laevigata** (Sm.) Hale Syn.: Parmelia laevigata



**livida** (Taylor) Hale Syn.: *Parmelia livida*  
**lividescens** (Kurok.) Hale (Hodkinson 2010)  
**meridensis** Hale & López (Nash, et al. 2002)  
**minarum** (Vainio) Krog & Swinscow Syns.: *Parmelia dissecta*, *P. hubrichtii*, *Parmelina dissecta*, *P. minarum*, *Parmelinopsis minarum* (Divakar 2013)  
**oostingii** (J. P. Dey) Hale Syn.: *Parmelia oostingii*  
**osseoalba** (Vainio) Park & Hale Syns.: *Parmelia formosana*  
**polydactyla** (Krog & Swinscow) T. H. Nash  
**producta** Hale Syn.: *Parmelia producta*  
**prolongata** (Kurok.) Hale Syns.: *Parmelia prolongata*, *P. lobulifera* var. *sanguineoreagens*, *P. rachista*  
**pseudosinuosa** (Asahina) Hale  
**pulvinata** (Fée) Hale Syn.: *Parmelia pulvinata*  
**punoensis** Kurok. & K. H. Moon (Nash et al. 2002)  
**pustulifera** (Hale) Skorepa Syn.: *Parmelia pustulifera*  
**revoluta** (Flörke) Hale Syn.: *Parmelia revoluta*  
**riparia** McCune (McCune 1998a)  
**rockii** (Zahlbr.) Hale Syn.: *Parmelia rockii*  
**showmanii** Hale  
**sinuosa** (Sm.) Hale Syn.: *Parmelia sinuosa*  
**spumosa** (Asahina) Krog & Swinscow Syns.: *Parmelia spumosa*, *Parmelina spumosa*, *Parmelinopsis spumosa* (Divakar et al. 2013)  
**subsaxatilis** (B. de Lesd.) Hale  
**swinscowii** (Hale) Krog & Swinscow Syns.: *Parmelia swinscowii*, *Parmelina swinscowii*, *Parmelinopsis swinscowii* (Divakar et al. 2013)  
**taylorensis** (M. E. Mitch.) Hale (Groner & Dietrich 1996)  
**thysanota** (Kurok.) Hale Syn.: *Parmelia thysanota*  
**virginica** (Hale) Hale Syn.: *Parmelia virginica*  
*formosana* (Zahlbr.) Hale = *H. osseoalba*  
*rachista* (Hale) Hale = *H. prolongata*  
*sorocheila* (Vainio) Divakar, A. Crespo, Sipman, Elix & Lumbsch Reports apparently based on *H. catawbiensis* (Egan 1987)

#### **ICMADOPHILA** Trevisan

**ericetorum** (L.) Zahlbr. Syn.: *Baeomyces aeruginosa*

#### **ILLOSPORIOPSIS** D. Hawksw.

\***christiansenii** (B. L. Brady & D. Hawksw.) D. Hawks. (Sikaroodi et al. 2001)

#### **ILLOSPORIUM** Martius

\***carneum** Fr.

\***corallinum** Roberge = *Marchandiomyces corallinus*

#### **IMMERSARIA** Rambold & Pietschm.

**athroocarpa** (Ach.) Rambold & Pietschm.

**carbonoidea** (J. W. Thomson) Esnault & Cl. Roux Syn.: *Lecidea carbonoidea*

#### **IMSHAUGIA** S. F. Meyer

**aleurites** (Ach.) S. F. Meyer Syn.: *Parmeliopsis aleurites*

**placorodia** (Ach.) S. F. Meyer Syn.: *Parmeliopsis placorodia*

#### **INGVARIELLA** Guderley & Lumbsch

**bispora** (Bagl.) Guderley & Lumbsch (Lumbsch 2004)

#### **INODERMA** (Ach.) Gray

**byssaceum** (Weigel) Gray Syn.: *Arthonia byssacea* (Frisch et al. 2015)

**INTRALICHEN** D. Hawksw. & M. S. Cole

\***baccisporus** Hawksworth & M. S. Cole (Hawksworth & Cole 2002)

\***christiansenii** (D. Hawksw.) D. Hawksw. & M. S. Cole Syn.: *Bispora christiansenii* (Hawksworth & Cole 2002)

\***lichenicola** (M. S. Christ. & D. Hawksw.) D. Hawksw. & M. S. Cole (Kocourková et al. 2012)

\***lichenum** (Diederich) D. Hawksw. & M. S. Cole (Hawksworth & Cole 2002) Syn.: *Bispora lichenum*

**INVOLUCROPYRENIUM** Breuss (Breuss 1996)

**waltheri** (Kremp.) Breuss Syn.: *Catapyrenium waltheri*, *Dermatocarpon waltheri*

**IONASPIS** Th. Fr.

**alba** Lutzoni

**lacustris** (With.) Lutzoni Syns.: *Hymenelia lacustris*, *Aspicilia lacustris*, *Lecanora lacustris*, *L. deplanans*

**lavata** H. Magn. Syn.: *Lecanora lavata*

**obtecta** (Vainio) R. Sant. (McCune et al. 2014b)

**odora** (Ach.) Th. Fr. ex Stein Syns.: *Gyalecta odora*, *Lecanora odora*

**suaveolens** (Fr.) Th. Fr. ex Stein

*annularis* H. Magn. (Thomson 1997) = *Hymenelia heteromorpha*

*arctica* Lynge = *Hymenelia arctica*

*chrysophana* (Körber) Stein = *I. suaveolens*

*epulotica* (Ach.) Blomb. & Forssell = *Hymenelia epulotica*

*epulotica* var. *arctica* (Lynge) H. Magn. = *Hymenelia arctica*

*heteromorpha* (Kremp.) Arnold = *Hymenelia heteromorpha*

*melanocarpa* (Kremp.) Arnold = *Hymenelia melanocarpa*

*ochracella* (Nyl.) H. Magn. = *Hymenelia heteromorpha*

*ochromicra* (Nyl.) Hue = *Hymenelia rhodopis*

*reducta* H. Magn. = *Hymenelia heteromorpha*

*rhodopis* (Sommerf.) Blomb. & Forssell = *Hymenelia rhodopis*

*schismatopis* (Nyl.) Hue = *Hymenelia heteromorpha*

*spitsbergensis* H. Magn. = nom. invalidum

**JAMESIELLA** Lücking, Sérus. & Vězda

**anastomosans** (P. James & Vězda) Lücking, Sérus. & Vězda (Lücking et al. 2007) Syn.: *Gyalideopsis anastomosans*

**JAPEWIA** Tønsberg

**subaurifera** Muhr & Tønsberg

**tornoënsis** (Nyl.) Tønsberg Syns.: *Lecidea tornoënsis*, *Mycoblastus tornoënsis*

*carrollii* (Coppins & P. James) Tønsberg (Aptroot 1996) = misidentification for *North America* (Printzen 1999)

**JAPEWIELLA** Printzen

**dollypartoniana** J. L. Allen & Lendemer (Allen & Lendemer 2015)

**JARXIA** D. Hawksw. (Harris 1995a)

**ilicicola** R. C. Harris (Harris 1995a)

**thelenula** R. C. Harris (Harris 1995a)

**JULELLA** Fabre

<sup>+</sup>**asema** R. C. Harris (Harris 1995a)

<sup>+</sup>**dispora** (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: *Polyblastiopsis dispora*

<sup>+</sup>**fallaciosa** (Arnold) R. C. Harris (Harris 1995a) Syn.: *Polyblastiopsis fallaciosa*

<sup>+</sup>**geminella** (Nyl.) R. C. Harris (Harris 1995a) Syn.: *Polyblastiopsis rappii*

<sup>+</sup>**lactea** (A. Massal.) M. E. Barr (Harris 1995a) Syn.: *Polyblastiopsis lactea*

<sup>+</sup>**sericea** (A. Massal.) Coppins (Aptroot 2002b)



- +**sublactea** (Nyl.) R. C. Harris (Harris 1995a) Syn.: *Clathroporina exiguella*, *C. amygdalina*, *Polyblastiopsis sublactaea*
- +**taxodii** R. C. Harris (Harris 1995a)
- +**variiformis** R. C. Harris (Harris 1995a)
- +**vitrispora** (Cooke & Harkness) M. E. Barr (Harris 1995a)

**KAERNEFELTIA** A. Thell & Goward (Thell & Goward 1996)

- californica** (Tuck.) A. Thell & Goward (Thell & Goward 1996) Syns.: *Alectoria californica*, *A. cetrariza*, *Cetraria californica*, *Cornicularia californica*, *Tuckermannopsis californica*
- merrillii** (Du Rietz) A. Thell & Goward (Thell & Goward 1996) Syns.: *Cetraria merrillii*, *Tuckermannopsis merrillii*

**KALCHBRENNERIELLA** Diederich & M. S. Christ.

- \***cyanescens** (Kalchbr.) Diederich & M. S. Christ. (Diederich 2002)

**KARSCHIA** Körber

- \***talcophila** (Ach.) Körber (Hafellner et al. 2002)
- \***athallina** (Müll. Arg.) Vouaux = *Dactylospora athallina*
- \***inops** Triebel & Rambold = *Buelliella inops*

**KARSTENIOMYCES** D. Hawksw.

- \***peltigerae** (P. Karsten) D. Hawksw. (Alstrup & Cole 1998)

**KEPHARTIA** R. C. Harris & Lendemer (Lendemer et al. 2013)

- crystalligera** R. C. Harris & Lendemer
- spinadiaboli** R. C. Harris & Lendemer

**KILIASIA** Hafellner = **TONINIA**

- athallina** (Hepp) Hafellner = *Toninia athallina*
- philippea** (Mont.) Hafellner = *Toninia philippea*
- tristis** (Müll. Arg.) Hafellner = *Toninia subnitida*

**KIRSCHSTEINIOTHELIA** D. Hawksw. Omitted as a totally saprophytic genus

**KNUFIA** L. J. Hutchinson & Unter.

- \***peltigerae** (Fuckel) Réblová & Unter. Syn.: *Capronia peltigerae* (Réblová et al. 2013)

**KOERBERIA** A. Massal.

- biformis** A. Massal.
- sonomensis** (Tuck.) Henssen = *Vestergrenopsis sonomensis*

**KOERBERIELLA** Stein

- wimmeriana** (Körber) Stein

**KOHLMEYERA** Schatz

- complicatula** (Nyl.) Schatz = *Mastodia tessellata* (Kohlmeyer et al. 2004)

**LABROCARPON** Etayo & Pérez-Ortega

- \***canariense** (D. Hawksw.) Etayo & Pérez-Ortega (Seavey & Seavey 2014a)

**LAEVIOMYCES** D. Hawksw. = **LICHENODIPLIS**

- \***lecanoricola** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001) = *Lichenodiplis lecanoricola*
- \***pertusariicola** (Nyl.) D. Hawksw. = *Lichenodiplis pertusariicola*

**LAHMIA** Körber

- fueistingii** Körber = *Arthrorhaphis grisea*

## **LAMBIELLA** Hertel

- caeca** (J. Lowe) Resl & T. Sprib. Syns.: *Lecidea caeca*, *Rimularia caeca* (Resl et al. 2015)  
**furvella** (Nyl. ex Mudd) M. Westb. & Resl Syns.: *Lecidea furvella*, *Rimularia furvella* (Resl et al. 2015)  
**gyrizans** (Nyl.) M. Westb. & Resl Syn.: *Rimularia gyrizans* (Resl et al. 2015)  
**impavida** (Th. Fr.) M. Westb. & Resl. Syns.: *Lecidea impavida*, *Rimularia impavida* (Resl. et al. 2015)  
**#insularis** (Nyl.) T. Sprib. (Spribille et al. 2014a) Syns.: *Lecidea insularis*, *Rimularia insularis*  
**sphacelata** (Th. Fr.) M. Westb. & Resl Syns.: *Lecidea sphacelata*, *Rimularia sphacelata* (Resl et al. 2015)

## **LASALLIA** Mérat

- caroliniana** (Tuck.) Davydov, Peršoh & Rambold Syn.: *Umbilicaria caroliniana* (Davydov et al. 2010)  
**papulosa** (Ach.) Llano Syns.: *Umbilicaria pustulata* var. *papulosa*, *U. papulosa*  
**pensylvanica** (Hoffm.) Llano Syn.: *Umbilicaria pensylvanica*  
**pustulata** (L.) Mérat Syn.: *Umbilicaria pustulata*  
*pustulata* subsp. *papulosa* (Ach.) W. A. Weber = *L. papulosa*

## **LASIOSPHAERIOPSIS** D. Hawksw. & Sivan.

- \*stereocaulicola** (Lindsay) O. E. Eriksson & R. Sant. (Zhurbenko & Daniëls 2003)

## **LATHAGRIUM** (Ach.) Gray (Otálora et al. 2014)

- auriforme** (With.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema auriculatum*, *C. auriforme*, *C. granosum* auct.  
**cristatum** (L.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema cristatum*, *C. cristatum* var. *marginale*  
**dichotomum** (With.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema dichotomum* *C. fluviatile*, *C. stenophyllum*  
**fuscovirens** (With.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema furvum*, *C. fuscovirens*, *C. tuniforme*  
**undulatum** (Flotow) Otálora, P. M. Jørg. & Wedin Syn.: *Collema undulatum*

## **LAUDERLINDSAYA** J. C. David & D. Hawksw. (McCune 1997a) = *Normandina* (Muggia et al. 2010)

- \*borreri** (Tul.) J. C. David & D. Hawksw. (McCune 1997a) = *Normandina pulchella*

## **LAURERA** Rchb.

- megasperma** (Mont.) Riddle Syns.: *Campylothelium nitidum*, *Clathroporina diphloea*  
**subdisjuncta** (Müll. Arg.) R. C. Harris  
*madreporiformis* (Eschw.) Riddle = *Bathelium madreporiforme* (Harris 1995a)  
*varia* (Fée) Zahlbr. = misidentification for *North America*

## **LECANACTIS** Körber

- abietina** (Ach.) Körber  
[**Bacidia akompsa** (Tuck.) Fink]  
**californica** Tuck.  
**dubia** G. Merr.  
**epileuca** (Nyl.) Tehler Syns.: *Platygrapha subattingens*, *Schismatomma subattingens*  
**salicina** Zahlbr.  
*amylacea* (Ehrh. ex Pers.) Arnold = *Lecanographa amylacea*  
*chloroconia* Tuck. = *Cresponea chloroconia*  
*dimelaenoides* Egea & Torrente = *Lecanographa dimelaenoides*  
**\*grumulosa** (Dufour) Fr. = *Lecanographa grumulosa*  
*illicebrosa* (Dufour) Fr. = *Lecanographa amylacea*  
*megaspora* (G. Merr.) Brodo = *L. abietina*  
*nashii* Egea & Torrente = *Lecanographa hypothallina*  
*patellarioides* (Nyl.) Vainio = *Bactrospora patellarioides*  
*premnea* (Ach.) Arnold = *Cresponea premnea*  
*ravenelii* (Tuck.) R. C. Harris = *Opegrapha ravenelii*  
*subattingens* (Nyl.) R. C. Harris = *L. epileuca*



subdryophila Follmann & Vězda = *Lecanographa subdryophila*  
zahlbruckneri Herre (Fink 1935) = *L. californica* (Ryan & Tehler 2004)

**LECANIA** A. Massal.

**arizonica** B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)  
**brunonis** (Tuck.) Herre  
#**caloplacicola** B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)  
**chalcophila** B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)  
**coeruleorubella** (Mudd) M. Mayrhofer (van den Boom & Ryan 2004b)  
**constricta** W. A. Weber  
**croatica** (Zahlbr.) Kotlov (Harris & Lendemer 2010)  
**cuprea** (A. Massal.) van den Boom & Coppins Syn.: *Bacidia cuprea*, *B. cupreorosella*, *Bilimbia cupreorosella*  
**cyrtella** (Ach.) Th. Fr. Syn.: *Biatora cyrtella*, *Lecidea cyrtella*  
**dubitans** (Nyl.) A. L. Sm.  
**dudleyi** Herre  
**erysibe** (Ach.) Mudd  
**flavescens** Lynge (Thomson 1997)  
**franciscana** (Tuck.) K. Knudsen & Lendemer Syns.: *Biatora franciscana*, *Catillaria franciscana* (Knudsen & Lendemer 2007)  
**fructigena** Zahlbr.  
**fuscella** (Schaerer) Körber  
**fuscelloides** B. D. Ryan & van den Boom (van den Boom & Ryan 2004b)  
[**Catillaria groenlandica** Lynge]  
**hassei** (Zahlbr.) W. Noble Syn.: *Solenopsora hassei*  
**hutchinsiae** (Nyl.) A. L. Sm. (Spribille et al. 2010)  
**inundata** (Hepp ex Körber) M. Mayrhofer (van den Boom & Ryan 2004b)  
**madida** Reese Naesb. & Björk (Reese Naesborg 2008)  
**naegelia** (Hepp) Diederich & van den Boom Syn.: *Bacidia naegelia*, *Bilimbia naegelia* (Ekman 1996)  
**nylanderiana** A. Massal.  
**pacifica** Zahlbr. ex B. D. Ryan & van den Boom (van den Boom & B. D. Ryan 2004b)  
**polycycla** (Anzi) Lettau (van den Boom & B. D. Ryan 2004b)  
**prasinoides** Elenkin (Reese Naesborg 2008)  
**rabenhorstii** (Hepp) Arnold (van den Boom & B. D. Ryan 2004b)  
**ryaniana** van den Boom (van den Boom & Ryan 2004b)  
**shastensis** Herre  
**stigmatella** (Tuck.) S. Ekman (Ekman 1996) Syn.: *Bacidia stigmatella*  
**subcaesia** (Nyl.) B. de Lesd.  
**subfuscula** (Nyl.) S. Ekman (Ekman 1996) Syns.: *Bacidia sibirica*, *B. subfuscula*  
**toninioides** Zahlbr.  
**turicensis** (Hepp) Müll. Arg.  
albariella (Nyl.) Müll. Arg. = *L. turicensis*  
alpivaga Th. Fr. = *Halecania alpivaga*  
arctica Lynge = *Caloplaca diphyodes*  
brattiae B. D. Ryan & van den Boom (van den Boom & Ryan 2004b) = *L. hassei* (Knudsen & Lendemer 2007)  
californica (Zahlbr.) Fink = *L. turicensis* (van den Boom & Ryan 2004b)  
cyathiformis Szatala (Tavares et al. 1997) = *Solenopsora cyathiformis*  
cyrtellina (Nyl.) Sandst. = *L. cyrtella*  
curvescens (Mudd) A. L. Sm. = *Bryonora curvescens*  
dimera (Nyl.) Th. Fr. = *L. dubitans*  
disceptans (Nyl.) Lynge = *Halecania alpivaga* (Dillman et al. 2011)  
pepegospora H. Magn. = *Halecania pepegospora*  
perproxima auct. = uncertain species of *Lecania*, perhaps *L. chalcophila* (van den Boom & Ryan 2004b)  
perproxima (Nyl.) Zahlbr. = *Caloplaca atroalba* (van den Boom & Ryan 2004b)  
subdispersa B. D. Ryan [non (Nyl. ex Hasse) Hasse] = *L. franciscana*

subdispersa (Nyl. ex Hasse) Hasse = Toninia subdispersa  
syringea (Ach.) Th. Fr. = L. fuscella  
tenera (Nyl.) Clauzade & Cl. Roux = Cliostomum tenera  
thallophila H. Magn. = Halecania alpivaga

#### **LECANOGRAPHA** Egea & Torrente

**aggregata** Egea & Torrente (Egea et al. 2004b, as Lecanographa “aff.” aggregata)  
**amylacea** (Ehrh. ex Pers.) Egea & Torrente Syns.: Lecanactis amylacea, L. illecebrosa, Opegrapha illecebrosa  
**brattiae** (Egea & Ertz) Ertz & Tehler (Ertz & Tehler 2011) Syn.: Opegrapha brattiae  
**dimelaenoides** (Egea & Torrente) Egea & Torrente Syn.: Lecanactis dimelaenoides  
**\*grumulosa** (Dufour) Egea & Torrente Syns.: Opegrapha diaphoroides, Lecanactis grumulosa, but questionable for North America  
**hypothallina** (Zahlbr.) Egea & Torrente Syns.: Platygrapha hypothallina, Schismatomma hypothallinum, Opegrapha hypothallina, O. hassei, Lecanactis nashii  
**insolita** Lendemer & K. Knudsen (Lendemer & Knudsen 2010)  
**lyncea** (Sm.) Egea & Torrente (Egea et al. 2004b)  
**lynceoides** (Müll. Arg.) Egea & Torrente (Egea et al. 2004b)  
**subdryophila** (Follmann & Vězda) Egea & Torrente Syn.: Lecanactis subdryophila

#### **LECANORA** Ach.

**achroa** Nyl. (Lücking et al. 2011b)  
**achroides** Vainio  
**actophila** Wedd.  
**aitema** (Ach.) Hepp Syn.: Lecidea aitema  
**alaskensis** H. Magn.  
**albella** (Pers.) Ach. var. **albella**  
**albella** var. **rubescens** (Imshaug & Brodo) Lumbsch  
**albellula** Nyl. (Printzen 2001)  
**albocaesiella** B. D. Ryan & T. H. Nash (Ryan et al. 2004)  
**albula** (Nyl.) Hue  
**aleutica** H. Magn.  
**allophana** (Ach.) Nyl.  
**anakeestiicola** [Lendemer & E. Tripp \(Lendemer & Tripp 2015\)](#)  
**annularis** Lendemer & K. Knudsen (Knudsen et al. 2014c)  
**anopta** Nyl. Syns.: Biatora pullula, Lecidea pullula (Pérez-Ortega et al. 2010)  
**anoptiza** Nyl.  
**apochroeoides** Vainio  
**appalachensis** Lendemer & R. C. Harris (Lendemer et al. 2013)  
**arenisaxicola** B. D. Ryan & T. H. Nash (Ryan et al. 2004)  
**argentata** (Ach.) Malme  
**argentea** Oxner & Volkova  
**argopholis** (Ach.) Ach.  
**atrosulphurea** (Wahlenb.) Ach.  
**austrocalifornica** Lendemer & K. Knudsen (Lendemer & Knudsen 2009)  
**bicincta** Ramond  
**boligera** (Norman ex Th. Fr.) Hedl.  
**brattiae** B. D. Ryan & T. H. Nash (Ryan et al. 2004)  
**brodoana** Lumbsch & T. H. Nash  
[**Parmularia brouardii** B. de Lesd.]  
**bryopsora** (Doppelb. & Poelt) Hafellner & Türk (Dillman et al. 2012)  
**cadubriae** (A. Massal.) Hedl. Syns.: Lecidea cadubriae, L. ramulicola  
**caesiorubella** Ach. subsp. **caesiorubella**  
**caesiorubella** subsp. **glaucomodes** (Nyl.) Imshaug & Brodo  
**caesiorubella** subsp. **merrillii** Imshaug & Brodo  
**caesiorubella** subsp. **saximontana** Imshaug & Brodo



**caesiosora** Poelt (Miller et al. 2005)  
**caesiosulphurea** Vainio  
**californica** Brodo  
**campestris** (Schaerer) Hue  
**canadensis** Lynge & H. Magn.  
**carneolutescens** Nyl. (Lumbsch et al. 2003)  
**carpineae** (L.) Vainio  
**cateilea** (Ach.) A. Massal.  
**[Lecidea caulophylla]** (Tuck.) Zahlbr.  
**cavicola** Creveld (Nash et al. 1998)  
**cenisia** Ach.  
**chlarotera** Nyl.  
**chloroleprosa** (Vainio) H. Magn. (Spribille et al. 2010)  
**chlorophaeodes** Nyl.  
**cinereofusca** H. Magn.  
**circumborealis** Brodo & Vitik.  
**cladonioides** Lynge  
**collatolica** J. W. Thomson & T. H. Nash  
**comoduensis** T. H. Nash & Hertel (Nash & Hertel 1997)  
**confusa** Almb.  
**congesta** Lynge  
**coniferarum** Printzen (Printzen 2001)  
**conizaeoides** Nyl. ex Crombie  
**cupressi** Tuck.  
**demosthenesii** Lumbsch & Messuti (Lumbsch et al. 2003)  
**densa** (Śliwa & Wetmore) Printzen (Printzen 2001)  
**discoënsis** Lynge  
**elapheia** Stizenb. (Lücking et al. 2011b)  
**epanora** (Ach.) Ach.  
**epibryon** (Ach.) Ach.  
**expallens** Ach.  
**farinaria** Borrer  
**floridula** Lumbsch  
**frustulosa** (Dickson) Ach. (Spribille et al. 2010)  
**fuscescens** (Sommerf.) Nyl. Syn.: *Lecidea fuscescens*  
**fuscidula** Degel.  
**gangaleoides** Nyl.  
**geophila** (Th. Fr.) Poelt  
**glabrata** (Ach.) Malme  
**granulifera** (Ach.) Nyl.  
**groenlandica** Lynge  
**gypsicola** St. Clair & Newberry (Rajvanshi et al. 1998)  
**helicopis** (Wahlenb.) Ach. (identification uncertain)  
**horiza** (Ach.) Lindsay  
**hybocarpa** (Tuck.) Brodo  
**hypocrocina** Nyl. (Seavey & Seavey 2012)  
**hypopta** (Ach.) Vainio Syn.: *Lecidea hypopta*  
**hypoptoides** (Nyl.) Nyl.  
**impudens** Degel. In eastern N.A. at least, a misapplied name (Lendemer et al. 2013)  
**imshaugii** Brodo  
**inaurata** C. A. Morse & Ladd (Morse & Ladd 2016)  
**insignis** Degel.  
**intricata** (Ach.) Ach.  
**intumescens** (Rebent.) Rabenh.  
**iowensis** Fink  
**jamesii** J. R. Laundon (Tønsberg 1997)

**kariana** Räsänen  
**latens** Printzen (Printzen 2001)  
**laxa** (Šliwa & Wetmore) Printzen (Printzen 2001)  
**layana** Lendemer (Lendemer 2015)  
**leprosa** Fée  
**leptacina** Sommerf.  
**leptacinella** Nyl.  
**lividolutea** Räsänen  
**louisianae** B. de Lesd.  
**luteovernalis** Brodo  
**marginata** (Schaerer) Hertel & Rambold Syns.: *Lecidea marginata*, *L. elata*, *L. purissima*. See note under "*Lecidea amylacea*."  
**masana** Lendemer & R. C. Harris (Lendemer et al. 2013)  
**maxima** Lynge  
**melaena** (Hedl.) Fink  
**mellea** W. A. Weber  
**meridionalis** H. Magn.  
**microbola** I. M. Lamb  
**microfusca** Lynge  
**miculata** Ach.  
**minutella** Nyl.  
**monticola** H. Magn.  
**mughicola** Nyl.  
**munzii** K. Knudsen & Lendemer (Knudsen & Lendemer 2009c)  
**nashii** B. D. Ryan (Ryan et al. 2004)  
**neoalbomarginata** Gyelnik  
**neodegelii** B. D. Ryan & T. H. Nash Syn.: *Squamarina degelii* (Ryan et al. 2004)  
**nordenskiöldii** Vainio  
**nothocaesiella** R. C. Harris & Lendemer (Lendemer et al. 2013)  
**ochraceorubescens** Arnold (LaGreca & Lumbsch 2001)  
**orae-frigidae** R. Sant.  
**oreinoides** (Körber) Hertel & Rambold Syns.: *Lecidea oreinodes*, *L. tennesensis*, *L. tessellina*  
**orizabana** Vainio (Lumbsch et al. 2003)  
**orosthea** (Ach.) Ach. Syn.: *Lecidea orosthea*  
**pacifica** Tuck. Syn.: *L. tetraspora*  
**paddensis** (Tuck.) T. Sprib. Syns.: *Biatora paddensis*, *Lecidea paddensis* (McCune et al. 2014b)  
**pallidochlorina** T. H. Nash, B. D. Ryan & Lumbsch (Ladd & Morse 2012)  
**peninsularis** K. Knudsen, Lendemer & Elix (Knudsen et al. 2011a)  
**permutata** Zahlbr.  
**perplexa** Brodo  
**phaeophora** (Stizenb.) H. Magn. Syn.: *Lecidea phaeophora*, *Biatora phaeophora*  
**phryganitis** Tuck.  
**placidensis** (Magnusson) Knoph, Leuckert & Rambold (Knoph & Leuckert 1994) Syns.: *Lecidea placidensis*, *Lecidella placidensis*, *Fuscidea placidensis*  
**plumosa** Müll. Arg. (Nash et al. 1998)  
**poliophaea** (Wahlenb.) Ach.  
**poluninii** Lynge  
**polytropa** (Ehrh.) Rabenh.  
**populicola** (DC.) Duby  
**pringlei** (Tuck.) I. M. Lamb subsp. **pringlei** Syn: *Lecidea pringlei*  
**pringlei** subsp. **brandegei** (Tuck.) Ryan (Ryan et al. 2004)  
**proserpens** Nyl. (Barrett & Thomson 1975)  
**protervula** Stirton (Stirton 1876)  
**pseudargentata** Lumbsch (LaGreca & Lumbsch 2001)  
**pseudistera** Nyl.  
**pseudolivacea** Zahlbr. (Esslinger & Tucker 2009)



**pseudomellea** B. D. Ryan  
**pseudosarcopidoides** M. Brand & van den Boom (Hutten et al. 2013)  
**pulicaris** (Pers.) Ach.  
**[Biatora pullula** Tuck.] (Printzen 1995)  
**reagens** Norman  
**rhodi** Szatala (LaGreca & Lumbsch 2001)  
**rubicunda** Bagl.  
**rupicola** (L.) Zahlbr. Syn.: *Glaucumaria rupicola*, *G. sordida*  
**salicicola** H. Magn.  
**saligna** (Schrader) Zahlbr. Syn.: *Lecanoropsis saligna*  
**sambuci** (Pers.) Nyl.  
**sarcopidoides** (A. Massal.) Hedl. (Hutten et al. 2013)  
**saxigena** Lendemer & R. C. Harris (Lendemer & Harris 2014d)  
**scrobiculata** (Th. Fr.) Øvstedal & Elix Syn.: *Lecidea scrobiculata* (Elix & Øvstedal 2004)  
**semitensis** (Tuck.) Zahlbr.  
**sierrae** B. D. Ryan & T. H. Nash  
**simeonensis** K. Knudsen & Lendemer (Lendemer & Knudsen 2009)  
**sophodopsella** Nyl.  
**stenotropa** Nyl. (LaGreca & Lumbsch 2001)  
**stramineoalbida** Vainio (Lendemer & Knudsen 2011)  
**strobilina** (Sprengel) Kieffer  
**subcavicola** B. D. Ryan (Ryan et al. 2004)  
**subimmergens** Vainio  
**subintricata** (Nyl.) Th. Fr.  
**subpallens** Zahlbr. (Lumbsch et al. 1997, Lendemer 2004e)  
**subravida** Nyl. (Hutten et al. 2013)  
**subrugosa** Nyl.  
**subsaligna** M. Brand & van den Boom ([van den Boom & Brand 2008](#))  
**substrobilina** Printzen (Printzen 2001)  
**sulphurea** (Hoffm.) Ach. Syn.: *Lecidea sulphurea*  
**swartzii** (Ach.) Ach. (Nash et al. 1998)  
**symmicta** (Ach.) Ach. Syn.: *Lecidea symmicta*  
**texana** W. A. Weber  
**thallophila** H. Magn.  
**thysanophora** R. C. Harris (Harris et al. 2000)  
**tristiuscula** H. Magn.  
**tropica** Zahlbr. (Seavey & Seavey 2012)  
**umbrosa** Degel.  
**urceolaria** (Fr.) Wetm.  
**utahensis** H. Magn. (Knudsen 2012)  
**valesiaca** (Müll. Arg.) Stizenb.  
**varia** (Hoffm.) Ach.  
**vegae** Malme  
**viriduloflava** B. de Lesd.  
**willeyi** Tuck.  
**wisconsinensis** H. Magn.  
**xanthosora** B. D. Ryan & Poelt  
**xylophila** Hue  
**zeroensis** Lendemer (Knudsen et al. 2011b)  
**agardhiana** Ach. ([Śliwa 2007b](#)) = *Myriolecis agardhiana*  
**albescens** (Hoffm.) Branth & Rostrup ([Śliwa 2007b](#), [Laundon 2010](#)) = *Myriolecis albescens*  
**albomarginata** (B. de Lesd.) Zahlbr. = *Aspicilia albomarginata*  
**albopruinosa** Looman = an *Aspicilia* sp.  
**alboradiata** H. Magn. = *Aspicilia alboradiata*  
**aliena** Zahlbr. = *Aspicilia aliena*  
**alphoplaca** (Wahlenb.) Ach. = *Lobothallia alphoplaca*

alpina Sommerf. = Bellemerea alpina  
 americana (B. de Lesd.) Zahlbr. = Aspicilia americana  
[andrewii B. de Lesd. \(Śliwa 2007b\) = Myriolecis andrewii](#)  
 annulata Lynge = Aspicilia annulata  
 anseris Lynge = Aspicilia anseris  
 applegatei Herre = Bellemerea alpina (Owe-Larsson & Ryan 2007)  
 aquatica (Körber) Hepp = Aspicilia aquatica  
 arctica Lynge = Aspicilia arctica  
 arizonica (Tuck. ex Willey) W. A. Weber = Omphalora arizonica  
 atra (Hudson) Ach. = Tephromela atra  
 atriseda (Fr.) Nyl. = Protoparmelia atriseda  
 atosanguinea G. Merr. = Caloplaca atosanguinea  
 atrynea (Ach.) Röhl. = Lecanora cenisia  
 badia (Hoffm.) Ach. = Protoparmelia badia  
 barkmaniana Aptroot & Herk (Kaminsky et al. 2013) = misidentification of L. floridula (Lendemer & Harris 2014b)  
 basaltica Lynge = Aspicilia narssaquensis  
 beringii Nyl. ("behringii") = L. zosteræ var. beringii (Śliwa 2007b)  
[bipruinosa Fink = Protoparmeliopsis bipruinosa](#)  
 bockii (Fr.) Rabenh. = Rimularia gibbosa  
 bolanderi Tuck. = Cladidium bolanderi  
 caesiocinerea Nyl. ex Malbr. = Circinaria caesiocinerea  
 caesiopruinosa H. Magn. = Aspicilia caesiopruinosa  
 caesiorubella subsp. lathamii Imshaug & Brodo = L. subpallens  
 caesiorubella subsp. prolifera (Fink) R. C. Harris = L. subpallens  
 calcarea (L.) Sommerf. = Circinaria calcarea  
 cancriformis (Hoffm.) Vainio = L. caesiorubella Ach. subsp. caesiorubella  
 candida (Anzi) Nyl. = Aspicilia candida  
 candida (Anzi) Nyl. var. nikrapensis (Darb.) Oxner (Barrett & Thomson 1975) = Aspicilia candida  
[carlottiana Lewis & Śliwa \(Lewis & Śliwa 2012\) = Myriolecis carlottiana](#)  
 cascadenis H. Magn. = [Protoparmeliopsis garovaglii](#)  
 castanea (Hepp) Th. Fr. = Bryonora castanea  
 chlarona (Ach.) Nyl. = L. pulicaris  
 chlorophana (Wahlenb.) Ach. = Pleopsidium chlorophanum  
 chloropolia (Erichsen) Almb. = L. impudens for most North American records  
 christoi W. A. Weber = [Rhizoplaca phaedrophthalma](#)  
 chrysoleuca (Sm.) Ach. = Rhizoplaca chrysoleuca  
 cinerea (L.) Sommerf. = Aspicilia cinerea  
 cinereofusca var. appalachensis Brodo = L. saxigena (Lendemer & Harris 2014d)  
 cinereorufescens (Ach.) Hepp = Bellemerea cinereorufescens  
 cingulata Zahlbr. = Aspicilia cingulata  
 circinata (Pers.) Ach. = Lobothallia radiosa  
 coilocarpa auct. = L. circumborealis  
 coilocarpa (Ach.) Nyl. = L. pulicaris  
 composita Lynge = Aspicilia composita  
 concinna J. W. Thomson = Aspicilia concinna  
 conizaea auct. = L. strobilina  
 conizaea (Ach.) Nyl. ex Crombie = L. expallens  
 constipans (Nyl.) Nyl. (Fink 1935) = Edrudia constipans  
 contorta (Hoffm.) J. Steiner = Circinaria contorta  
[contractula Nyl. = Myriolecis contractula](#)  
[crenulata Hooker \(Śliwa 2007b\) = Myriolecis crenulata](#)  
[crustacea \(Savicz\) Zahlbr. \(Ryan & Nash 1997b\) = Protoparmeliopsis crustacea](#)  
 degelii T. Schauer & Brodo = L. cinereofusca var. cinereofusca  
 demissa (Körber) Zahlbr. = Caloplaca demissa  
 deplanans Nyl. = Ionaspis lacustris (Lendemer & Yahr 2004)



desertorum Kremp. North American reports are *Circinaria arida*  
 diffracta Ach. = [Protoparmeliopsis muralis](#)  
 diphasia Tuck. = *Caloplaca diphasia*  
 disceptans Nyl. = *Halecania alpivaga* (Dillman et al. 2011)  
[dispersa](#) (Pers. ) Sommerf. = [Myriolecis dispersa](#)  
[dispersoareolata](#) (Schaerer) Lamy = [Protoparmeliopsis dispersoareolata](#)  
 disserpens (Zahlbr.) H. Magn. = *Aspicilia disserpens*  
 distans (Pers. ex Ach.) Nyl. = *L. populicola*  
 effusa (Hoffm.) Ach. = *L. saligna*  
 elevata Lynge = *Aspicilia elevata*  
 elmorei E. D. Rudolph = *Circinaria elmorei*  
 epulotica (Ach.) Nyl. = *Hymenelia epulotica*  
 erythrantha Tuck. (Fink 1935) = *Caloplaca erythrantha* (Wetmore 2007b)  
 exigua f. pruinosa Merrill = *Rinodina hallii* (Sheard 2010)  
 eyerdamii Herre = *L. xylophila*  
 filamentosa (Stirton) Elix & Palice (Pérez-Ortega et al. 2010; Palice et al. 2011) = *Palicella filamentosa*  
 (Rodriguez Flakus & Printzen 2014)  
 fimbriata H. Magn. = *Aspicilia fimbriata*  
 flavida Hepp = *Eiglera flavida*  
 flavopunctata Tønsberg = *Biatora flavopunctata*  
 floridana Tuck. = *Caloplaca floridana*  
 flotoviana Sprengel (Ryan et al. 2004) = [Myriolecis semipallida](#) for North American reports (Śliwa 2007a, Zhao et al. 2016)  
[flowersiana](#) H. Magn. = [Myriolecis flowersiana](#)  
 frustulosa auct. N. A. in part = *L. argopholis* (Vänska 1984)  
[fugiens](#) Nyl. (Ryan et al. 2004, as *Lecanora* “aff.” *fugiens*, Śliwa 2007b) = [Myriolecis fugiens](#)  
 fuliginosa Brodo = *L. argentea*  
 fulva Schwein. (Fink 1935) Identity uncertain (Harris 2004)  
 fuscidula Degelius = *L. minutella* Nyl. (LaGreca & Lumbsch 2001)  
 galactina (Ach.) Nyl. (Fink 1935) = [Myriolecis albescens](#) (Scholz 2000, Zhao et al. 2016))  
 galactinula Vainio = *L. pseudistera*  
[garovaglii](#) (Körber) Zahlbr. subsp. [garovaglii](#) = [Protoparmeliopsis garovaglii](#)  
[garovaglii](#) subsp. [cascadensis](#) (H. Magn.) B. D. Ryan & T. H. Nash (Ryan et al. 2004) = [Protoparmeliopsis garovaglii](#)  
[geiserae](#) B. D. Ryan (Ryan et al. 2004) = [Protoparmeliopsis geiserae](#)  
 gelida (L.) Ach. = *Placopsis gelida*  
 gibbosa (Ach.) Nyl. = *Circinaria gibbosa*  
 gibbosula H. Magn. = *Circinaria gibbosa*  
 glaucomela Tuck. = *Pertusaria glaucomela*  
 glaucophana Nyl. ex Hasse = *Rhizoplaca glaucophana*  
 glaucopsina Nyl. = *Aspicilia glaucopsina*  
 granatina Sommerf. = *Euopsis granatina*  
 granifera Ach. = *Malmidea granifera*  
 grandis H. Magn. = *Protoparmelia badia*  
 grantii H. Magn. = *L. xylophila*  
[gyalectodes](#) Nyl. = [Topelia gyalectodes](#)  
[gyrophorica](#) Lendemer (Knudsen & Lendemer 2009c) = [Protoparmeliopsis gyrophorica](#)  
[hagenii](#) (Ach.) Ach. = [Myriolecis hagenii](#)  
 haydenii Tuck. = *Rhizoplaca haydenii*  
 heteroplaca Zahlbr. = *Aspicilia heteroplaca*  
 holophaea (Mont.) Nyl. = *Solenopsora holophaea*  
 hypospilota Vainio = *L. oreinoides*  
 incusa (Fr.) Vainio = *Caloplaca demissa*  
 intrudens H. Magn. = *Miriacidia intrudens*  
[invadens](#) H. Magn. (Śliwa 2007b) = [Myriolecis invadens](#)  
[juniperina](#) Śliwa (Ryan et al. 2004) = [Myriolecis juniperina](#)

kofae B. D. Ryan & T. H. Nash = *Protoparmeliopsis kofae*  
 laatokkaensis (Räsänen) Poelt = *Protoparmeliopsis laatokkaensis*  
 lacustris (With.) Nyl. = *Ionaspis lacustris*  
 laevata (Ach.) Nyl. = *Aspicilia laevata*  
 laevis Poelt = *L. horiza*, but N. American records are *L. xylophila*  
 lavata (H. Magn.) Fink = *Ionaspis lavata*  
 lentigera (Weber) Ach. = *Squamarina lentigera*  
 lesleyana (Darb.) Paulson = *Aspicilia lesleyana*  
 limitata H. Magn. = *Aspicilia limitata*  
 marginalis Hasse = *Rhizoplaca marginalis*  
 mastoidea Lynge = *Aspicilia berntii*  
 mastrucata (Wahlenb.) Ach. (Wetmore 1967) = *Sagedia mastrucata*  
 mazatzalensis B. D. Ryan & T. H. Nash = *Protoparmeliopsis mazatzalensis*  
 melanaspis (Ach.) Ach. = *Lobothallia melanaspis*  
 melanophthalma (DC.) Ramond = *Rhizoplaca melanophthalma*  
 mniaroeiza Nyl. = *Rinodina mniaroeiza*  
 morioides (Blomb. ex Arnold) Blomb. = *Clauzadeana macula*  
 muralis (Schreber) Rabenh. = *Protoparmeliopsis muralis*  
 muralis var. brunneola (Mereschk.) Ryan & T. H. Nash (Nash et al. 1998) = *Protoparmeliopsis muralis*  
 muralis var. versicolor (Pers.) Tuck. = *Protoparmeliopsis muralis*  
 mutabilis Sommerf. = *L. intricata*  
 mutabilis (Ach.) Nyl. = *Megaspora verrucosa*  
 myrina Fée (Fink 1935) Identity uncertain; possible orthographic error for *L. myrinii* (Esslinger & Tucker 2009)  
 myrinii (Fr.) Tuck. = *Aspilidea myrinii*  
 narssaquensis Lynge = *Aspicilia narssaquensis*  
 nephaea Sommerf. = *Protoparmelia nephaea*  
 nevadensis H. Magn. = *Protoparmeliopsis garovaglii*  
 nigromarginata H. Magn. = *Rhizoplaca nigromarginata*  
 nikrapensis (Darb.) Zahlbr. = *Aspicilia nikrapensis*  
 novae-semliae Zahlbr. = *Aspicilia novae-semliae*  
 novomexicana H. Magn. = *Rhizoplaca novomexicana*  
 novomexicana B. de Lesd. = identity uncertain  
 obpallens Nyl. ex Hasse = *Acarospora obpallens*  
 occidentalis (Lynge) Lynge = *L. argopholis*  
 ochrococca (Nyl.) Clauzade & Cl. Roux = *Protoparmelia ochrococca*  
 odora (Ach.) Tuck. (Fink 1935) = *Ionaspis odora*  
 olivacea (Bagl. & Carestia) J. Steiner (Herre 1911, Fink 1935) = *Lecanora pseudolivacea*  
 olivaceopallida H. Magn. = *Aspicilia olivaceopallida*  
 opiniconensis Brodo = *Rhizoplaca opiniconensis*  
 oregana Tuck. = *L. argopholis*  
 pachythallina Lynge = *L. geophila*  
 palanderi Vainio = *L. zosteriae*  
 pallescens (L.) Röhl = *Ochrolechia pallescens* (L.) A. Massal., but misidentification for North America  
 pallescens var. upsaliensis (L.) Flotow = *Ochrolechia upsaliensis*  
 pallida (Schreber) Rabenh. var. pallida = *L. albella* var. *albella*  
 pallida var. rubescens Imshaug & Brodo = *L. albella* var. *rubescens*  
 parisiensis Nyl. = *L. horiza*  
 pelobotrya (Wahlenb.) Sommerf. = *Amygdalaria pelobotryon*  
 peltata (Ramond) Steudel = *Protoparmeliopsis peltata*  
 peltastictoides Hasse (Knudsen 2003) = *Aspicilia peltastictoides* (Knudsen & Kocourková 2013)  
 percrenata H. Magn. (Śliwa 2007b) = *Myriolecis percrenata*  
 pergibbosa H. Magn. = *Aspicilia pergibbosa*  
 perpruinosa Fröberg (Śliwa 2007b) = *Myriolecis perpruinosa*  
 perradiata Nyl. = *Aspicilia perradiata*  
 persimilis (Th. Fr.) Nyl. = *Myriolecis persimilis*



pertusa Lynge = *Aspicilia pertusa*  
 phaedrophthalma Poelt var. phaedrophthalma = *Rhizoplaca phaedrophthalma*  
 phaedrophthalma var. christoi (W. A. Weber) B. D. Ryan (Ryan et al. 2004) = *Rhizoplaca phaedrophthalma*  
 phaeobola Tuck. = *Protoparmelia ochrococca*  
 pinastri (Schaerer) H. Magn. = *L. pulicaris*  
 pinguis Tuck. = *Protoparmeliopsis pinguis*  
 piniperda Körber = *L. albellula* Nyl. (Printzen 2001)  
 pleiospora Nyl. = *Acarospora thelococcoides*  
 pleistospora Nyl. = *Acarospora thelococcoides*  
 plicigera Zahlbr. = *Aspicilia plicigera*  
 polychroma (Anzi) Nyl. = *Aspicilia polychroma*  
 praecrenata Nyl. = *Aspicilia praecrenata*  
 praeradiosa Nyl. = *Lobothallia praeradiosa*  
 privigna (Ach.) Nyl. = *Polysporina simplex*  
 privigna var. revertens Tuck. = *Polysporina simplex*  
 pruinosa Chaub. Not in North America  
 pseudochlarotera Brodo = *L. hybocarpa*  
 punicea (Sw.) Ach. North American records are *Haematomma persoonii*  
 radiosa (Hoffm.) Schaerer = *Lobothallia radiosa*  
 ramulicola (H. Magn.) Printzen & P. May (Printzen & May 2002) = *L. filamentosa*  
 reptans Looman = *Aspicilia reptans*  
 riparia G. Merr. non (Flotow) M. Steiner = *L. xylophila*  
 rolleana (Hue) Zahlbr. = *Aspicilia rolleana*  
 rosulata (Körber) Stizenb. = *Aspicilia rosulata*  
 rubina (Vill.) Ach. = *Rhizoplaca chrysoleuca*  
 rugosa auct. (Fink 1935) = *L. chlarotera* (Brodo 1984)  
 rugosella Zahlbr. = *L. chlarotera* (Ryan et al. 2004)  
 ryrkaipiae H. Magn. = *Aspicilia ryrkaipiae*  
 salina H. Magn. = *Myriolecis salina*  
 sanguinea (Kremp.) Mig. = *Bellemeria sanguinea*  
 saxicola (Pollich) Ach. = *Protoparmeliopsis muralis*  
 schizochromatica Pérez-Ortega, T. Sprib. & Printzen (Pérez-Ortega et al. 2010) = *Palicella*  
 schizochromatica (Rodríguez Flakus & Printzen 2014)  
 schofieldii Brodo (Brodo 2010) = *Myriolecis schofieldii*  
 scotopholis (Tuck.) Timdal = *Miriquidica scotopholis*  
 semipallida H. Magn. (Fryday 2004a) = *Myriolecis semipallida*  
 sipeana H. Magn. = *Aspicilia sipeana*  
 sordida (Pers.) Th. Fr. = *L. rupicola*  
 spodophaeiza Nyl. (Fink 1935) = *Lecania aipospila* (Wahlenb.) Th. Fr., but misidentification for North America (Ryan et al. 2004)  
 stenospora Stizenb. = *Pleopsidium flavum*  
 straminea Ach. = *Myriolecis straminea*  
 stygioplaca Nyl. = *Aspicilia subradians*  
 subdispersa Nyl. ex Hasse = *Toninia subdispersa*  
 subfusca (L.) Ach. = nom. rej. prop. = *L. allophana*  
 subfusca var. campestris (Schaerer) Rabenh. = *Lecanora campestris*  
 subfuscata H. Magn. = *L. argentata*  
 sublapponica Zahlbr. = *Aspicilia sublapponica*  
 subolivascens Nyl. = *Caloplaca demissa*  
 subpallida G. Merr. non C. Knight = *L. subpallens*  
 subradians Nyl. = *Aspicilia subradians*  
 subradiascens Nyl. = *Aspicilia subradians*  
 superfluens H. Magn. = *L. geophila*  
 supertegens (Arnold) Zahlbr. = *Aspicilia supertegens*  
 sylvestris (Nyl.) Zahlbr. = *L. rubicunda*

symmictera Nyl. = *L. symmicta*  
 tartarea (L.) Ach. = *Ochrolechia tartarea*  
 tenera (Nyl.) Crombie = *Cliostomum tenerum*  
 tenuis H. Magn. = *Aspicilia tenuis*  
 tessellina (Tuck.) Zahlbr. = *L. oreinoides*  
 tetraspora H. Magn. = *L. pacifica*  
 thamnitis Tuck. = *Cladidium bolanderi*  
 thamnoplaca Tuck. = *Lobothallia alphoplaca*  
 thelococcoides Nyl. = *Acarospora thelococcoides* (Lendemer 2004a)  
 thomsonii H. Magn. = *Rhizoplaca novomexicana* (Ryan & Nash 1991, Zhao et al. 2016)  
*torrida* Vainio = *Myriolecis straminea*  
 turbinata Poelt & Leuckert = *L. zosteræ* var. *beringii* (Śliwa 2007b)  
 umbrina (Ach.) A. Massal. = *L. hagenii* (Śliwa 2007b)  
 urceolaria (Fr.) Wetmore = *Megaspora verrucosa*  
 varia subsp. *densa* Śliwa & Wetmore (Śliwa & Wetmore 2000) = *L. densa*  
 varia subsp. *laxa* Śliwa & Wetmore (Śliwa & Wetmore 2000) = *L. laxa*  
 variolascens auct. = *L. impudens* for North American records  
*#verrucariicola* B. D. Ryan (Ryan et al. 2004) = *Miriquidica verrucariicola* (Knudsen et al. 2015)  
 verrucigera (Hue) Zahlbr. = *Aspicilia verrucigera*  
 verrucosa (Ach.) Laurer = *Megaspora verrucosa*  
 versicolor (Pers.) Ach. = *Protoparmeliopsis muralis*  
 victoriae (F. Wilson) “Tibell” Erroneous creation by typographic error (in ver. 10), should be *Mycocalicium victoriae*  
*weberi* B. D. Ryan = *Rhizoplaca weberi*  
*wetmorei* Śliwa (Ryan et al. 2004) = *Myriolecis wetmorei*  
 xanthophana Nyl. = *Acarospora xanthophana*, but a misidentification for North America  
*zosteræ* (Ach.) Nyl. var. *zosteræ* = *Myriolecis zosteræ*  
*zosteræ* var. *beringii* (Nyl.) Śliwa (Śliwa 2007b) = *Myriolecis zosteræ*  
*zosteræ* var. *palanderi* (Vainio) Śliwa 2007b) = *Myriolecis zosteræ*

#### LECANOROPSIS M. Choisy

*saligna* (Schrader) M. Choisy = *Lecanora saligna*

#### LECIDEA Ach.

*admiscens* Nyl.  
*albofuscescens* Nyl.  
*albohyalina* (Nyl.) Th. Fr. Syn.: *Biatora albohyalina* (Printzen & Tønsberg 1999)  
*alpestris* Sommerf.  
*anniculensis* J. Lowe Possibly a syn. of *Brianaria lutulata* (Coppins & Fryday 2006b)  
*atomaria* Th. Fr.  
*atrobrunnea* (Ramond ex Lam. & DC.) Schaerer subsp. *atrobrunnea*  
*atrobrunnea* subsp. *deplanaica* Hertel & Leuckert (Hertel & Leuckert 2011)  
*atrobrunnea* subsp. *planaica* Hertel & Leuckert (Hertel & Leuckert 2011)  
*atromarginata* H. Magn.  
*atroviridis* (Arnold) Th. Fr.  
*auriculata* Th. Fr. subsp. *auriculata* (Hertel & Andreev 2003)  
*auriculata* subsp. *brachyspora* Th. Fr. (Hertel & Andreev 2003)  
*baffiniana* H. Magn.  
*betulicola* (Kullh.) H. Magn. f. *endamyalea* (Hedl.) Hinter. (Printzen & Tønsberg 1999)  
*brachyspora* (Th. Fr.) Nyl.  
*brodoana* Hertel & Leuckert (Hertel & Printzen 2004)  
*brunneofusca* H. Magn.  
*californica* Zahlbr.  
*carneoalbans* Nyl.  
*carnulenta* (Tuck.) Fink  
*cascadensis* H. Magn.



**cellularis** Lowe  
**cinerata** Zahlbr.  
**commaculans** Nyl. (Fryday 2006)  
**confluens** (Weber) Ach.  
**confluentula** Müll. Arg. (Knudsen & Kocourková 2014b)  
**congesta** Fink  
**crassilabra** Müll. Arg.  
**crisima** Nyl.  
**cruciaria** Tuck.  
**cyrtidia** Tuck. (Harris 1997)  
**deminutula** H. Magn.  
**despecta** Th. Fr.  
**diducens** Nyl.  
**eckfeldtii** Zahlbr.  
**ecrustacea** (Anzi ex Arnold) Arnold  
**enalla** Nyl. (Printzen 1995)  
**enterophaea** Vainio  
**epiphaea** Nyl. (Spribille et al. 2010)  
**erythrophaea** Flörke ex Sommerf.  
**extenuata** Vainio  
**flavidolivens** (Tuck.) Fink  
**floridensis** Nyl.  
**fuliginosa** Taylor  
**furvonigrans** (Tuck. ex Willey) Zahlbr. (Coppins & Fryday 2006b)  
**fuscatoatra** Nyl.  
**fuscoatra** (L.) Ach.  
**goniophiloides** B. de Lesd.  
**haerjedalica** H. Magn. (Fryday 2004a)  
**hassei** Zahlbr.  
**herteliana** Fryday & Coppins (Fryday & Coppins 2012)  
**hoganii** E. Tripp & Lendemer (Tripp & Lendemer 2015)  
**holopolia** (Tuck.) Zahlbr.  
**homosema** Nyl.  
**hypomela** Nyl.  
**intropallida** Fink  
**katahdinensis** Degel.  
**kingmanii** (Hasse) Hertel & S. Ekman (Hertel & Printzen 2004)  
**laboriosa** Müll. Arg. (Hertel 1995)  
**labradorica** Arnold  
**lactea** Flörke ex Schaerer (McCune et al. 2014b)  
**lapicida** (Ach.) Ach. (Coppins 2002; Hertel & Andreev 2003)  
**leprarioides** Tønsberg  
**leucothallina** Arnold  
**lithophila** (Ach.) Ach.  
**louisianae** B. de Lesd.  
**lyngei** Degel.  
**malmeana** Zahlbr. (Spribille et al. 2010)  
**mamillana** Tuck.  
**mannii** Tuck.  
**meiocarpa** Nyl. var. **tacomensis** Printzen & Tønsberg (Printzen & Tønsberg 1999)  
**melaphanoides** Nyl.  
**merrillii** H. Magn.  
**microps** Tuck. (Fink 1935, Perlmutter & Greene 2005)  
**micytho** Tuck. ex Willey (Coppins & Fryday 2006b)  
**moreliiensis** B. de Lesd.  
**mutabilis** Fée

**nearingii** H. Magn.  
**nylanderi** (Anzi) Th. Fr.  
**occidentalis** Lynge  
**olivascens** Th. Fr.  
**oreophila** K. Knudsen & Kocourk. (Knudsen & Kocourková 2014a)  
**pacifica** Herre  
**paupercula** Th. Fr. (Hertel & Andreev 2003)  
**peliaspis** (Tuck.) Zahlbr.  
**perlatolica** Hertel & Leuckert (Hertel & Printzen 2004)  
**phaeopelidna** Vainio  
**phaeops** Nyl.  
**picea** Lynge  
**plana** (J. Lahm) Nyl.  
**plebeja** Nyl.  
**polaris** Lynge  
**polycocca** Sommerf.  
**populina** Müll. Arg. ex Nyl. Syn.: *Micarea populina*  
**praenubila** Nyl.  
**praetermissa** Tønsberg  
**promiscens** Nyl.  
**protabacina** Nyl.  
**pseudaglaea** Hertel (Hertel & Printzen 2004)  
**pulla** Lowe  
**pumicicola** H. Magn.  
**ramulosa** Th. Fr.  
**rivulorum** H. Magn.  
**roseotincta** Coppins & Tønsberg  
**rubrocastanea** T. Sprib. & Printzen (Spribille & Printzen 2007)  
**sarcogynoides** Körber (McMullin & Lendemer 2013)  
**sauteri** Körber (Hertel & Printzen 2004)  
**scabridula** Hedl. nom. illeg. (Spribille & Björk 2008)  
**silacea** Ach.  
**somphoterella** Vainio  
**sphaerella** Hedl. = a species of *Lecania*? (Printzen 1995)  
**steineri** Hertel  
**strasseri** Zahlbr. (Spribille et al. 2010)  
**subaglaea** B. de Lesd.  
**subcandida** H. Magn.  
**subfilamentosa** (Zahlbr.) Fryday (Fryday 2008)  
**subrhagadiella** Lynge  
**swartzioidea** Nyl.  
**syncarpa** Zahlbr. (McCune 1998b)  
**tenayucae** B. de Lesd.  
**tenuissima** Lynge  
**tessellata** Flörke  
**tessellata** var. **caesia** (Anzi) Arnold  
**theodori** Lynge  
**torquens** Müll. Arg. = a species of *Lecanora*? (Printzen 1995)  
**trapelioides** Printzen (Hertel & Printzen 2004)  
**truckeei** Herre  
**turgidula** Fr. Syn.: *Biatora turgidula*  
**umbonata** (Hepp) Mudd  
**varians** Ach. Syn.: *Biatora varians*, *Pyrrhospora varians* (Hertel & Printzen 2004), *Lecidea subtilis* (Lendemer & Harris 2014c)  
**versicolor** Schwein. (Printzen 1995)  
**virginiensis** Calk. & Nyl.



**xanthococcoides** Zahlbr.

ablephora Nyl. = Ramonia ablephora  
acrocyanea (Th. Fr.) H. Magn. = Lecidella patavina  
adironackii H. Magn. = Psilolechia clavulifera  
aenea (Fr.) Nyl. = Miriquidica garovaglio  
aeruginosa Borrer = Trapeliopsis flexuosa  
aglaea Sommerf. = Calvitimela aglaea  
aglaeida Nyl. = Calvitimela aglaea  
ahlesii (Hepp) Nyl. (Harris 1995b) = Bryobilimbia ahlesii  
ahlesii var. nemoralis (J. Lowe) Fryday & Coppins (Coppins & Fryday 2006b) = Bryobilimbia ahlesii  
var. nemoralis  
aitema Ach. = Lecanora aitema  
alaiensis Vainio = Lecidella patavina  
alaskensis Nyl. = Herteliana alaskensis  
albidocinerella (Vainio) Vainio = Lecidella effugiens  
albocaerulescens (Wulfen) Ach. = Porpidia albocaerulescens  
albonigra H. Magn. = Lecidella carpathica (Coppins & Fryday 2006b)  
albosuffusa Th. Fr. = Farnoldia jurana  
aleutica Degel. = Fuscidea aleutica  
amabilis B. de Lesd. = Carbonea latypizodes  
amaurospoda (Anzi) Vainio = Lecidea pullata  
"amylacea Ach. 1810" nom. illeg. Probably refers to Lecanora marginata  
aniptiza Stirton = Micarea denigrata  
anthracophila Nyl. = Carbonicola anthracophila  
antoniensis H. Magn. = L. hassei  
apochroeiza Nyl. = Biatora subduplex  
arctica Sommerf. = Frutidella caesioatra  
arctogena (Th. Fr.) H. Olivier = Calvitimela testaceoatra  
arcuatula (Arnold) Nyl. = Fuscidea recensa var. arcuatula  
armeniaca (DC.) Fr. = Calvitimela armeniaca  
assimilata Nyl. = Micarea assimilata  
assimilis (Körber) Th. Fr. = Carbonea assimilis  
associata Th. Fr. = Geltingia associata  
atrata (Ach.) Wahlenb. = Tremolecia atrata  
atrobrunnea subsp. saxosa Hertel & Leuckert (Hertel & Printzen 2004) = L. syncarpa (McCune et al. 2014b)  
atrobrunnea subsp. stictica Hertel & Leuckert (Hertel & Printzen 2004) = L. protabacina (McCune et al. 2014b)  
atrofulva Sommerf. = Miriquidica atrofulva  
atrofusca (Hepp) Mudd = Bryobilimbia hypnorum  
atrolutescens Nyl. = L. mannii  
atronivea Arnold = Carbonea atronivea  
austrocalifornica Zahlbr. = Carbonea latypizodes  
berengeriana (A. Massal.) Nyl. (Hertel & Printzen 2004) = Mycobilimbia berengeriana  
botryosa (Fr.) Th. Fr. = Hertelidea botryosa  
brandegei Tuck. = Lecanora pringlei subsp. brandegei  
brouardii (B. de Lesd.) Zahlbr. = Psorula rufonigra  
brujeriana (D. Dietr.) Leighton = Ainoa mooreana, [but a misidentification for North America](#)  
cadubriae (A. Massal.) Nyl. = Lecanora cadubriae  
caeca J. Lowe = [Lambiella caeca](#)  
caesioatra Schaerer = Frutidella caesioatra  
caesiocoronata J. Lowe = Lecidea olivascens (Degelius 1957); belongs to Lecanora according to Printzen (1995)  
calcivora (Ehrh.) Nyl. = Clauzadea immersa  
carbonoidea J. W. Thomson = Immersaria carbonoidea  
carpathica (Körber) Szatala = Lecidella carpathica

catalinaria Stizenb. = Lecidella asema  
 caudata Nyl. (Fink 1935) = Ropalospora lugubris  
 caulophylla (Tuck.) Zahlbr. = a Lecanora sp.  
 chalybeiza Nyl. = Leimonis erratica  
 cinereoatra Ach. = Porpidia cinereoatra  
 cinereorufa Schaerer = Schaereria cinereorufa  
 cinnabarina Sommerf. = Ramboldia cinnabarina  
 circumnigrata H. Magn. = Miriquidica pulvinata  
 circumnigrata var. reagens H. Magn. = Miriquidica lulensis  
 coarctata (Turner ex Sm.) Nyl. = Trapelia coarctata  
 colludens Nyl. = Rhizocarpon hochstetteri  
 columbiana H. Magn. = L. tessellata  
 columnata J. Lowe = Cecidonia xenophana  
 conferenda Nyl. = Adelolecia kolaensis  
 contigua Fr. = Porpidia macrocarpa  
 contigua var. convexella (Wainio) Fink (Claassen 1917) = Porpidia macrocarpa  
 coroniformis Kremp. = Psora crenata  
 crassipes (Th. Fr.) Nyl. = Helocarpon crassipes  
 crenata (Taylor) Stizenb. = Psora crenata  
 crustulata (Ach.) Sprengel = Porpidia crustulata  
 cuprea Sommerf. = Biatora cuprea  
 cyanea (Ach.) Rohl. = L. tessellata  
 cyanescens Lynge = L. lapicida  
 cyathoides (Ach.) Ach. = Fuscidea cyathoides, but a misidentification for North America  
 cyrtella Ach. = Lecania cyrtella  
 decipiens (Hedwig) Ach. = Psora decipiens  
 degelii H. Magn. = Porpidia degelii (Lendemer & Harris 2014c)  
 delincta Nyl. = Bryobilimbia ahlesii (Arup 2004, Fryday et al. 2014)  
 declinis Tuck. = Catillaria nigroclavata (Ekman 1996)  
 demissa (Rutstr.) Ach. = Lecidoma demissum  
 deustata Zahlbr. = Miriquidica deusta  
 diapensiae Th. Fr. = Bryobilimbia diapensiae  
 dicksonii auct. = Tremolecia atrata  
 dicksonii (Gmelin) Ach. = nomen dubium  
 dilutiuscula Nyl. = Brianaria bauschiana  
 diversa J. Lowe = Porpidia contraponenda  
 dolodes Nyl. = Schaeraria dolodes  
 efflorescens (Hedl.) Erichsen = Biatora efflorescens  
 elabens Fr. = Ramboldia elabens  
 elaeochroma (Ach.) Ach. = Lecidella elaeochroma  
 elata Schaerer = Lecanora marginata  
 elegantior H. Magn. = Amygdalaria elegantior  
 ementiens Nyl. = Biatora ementiens (Printzen 2014)  
 endolitheia Lynge = Lecidella patavina  
 enteroleuca auct. = Lecidella spp.  
 epiiodiza Nyl. = Schaereria endocyanea  
 epixanthoidiza Nyl. nom. rej. prop. = Biatora efflorescens  
 erratica Körber = Leimonis erratica  
 euphorea (Flörke) Nyl. = Lecidella euphorea  
 evansii H. Magn. = Lecidella carpathica  
 fissuriseda Poelt = Mycobilimbia fissuriseda  
 flavocaerulescens Hornem. = Porpidia flavicunda  
 flexuosa (Fr.) Nyl. = Trapeliopsis flexuosa  
 friesii Ach. = Xylopsora friesii  
 furfuracea Pers. = Phyllopsora furfuracea  
 furfurosa Tuck. ex Nyl. = Malmidea furfurosa



furva J. Lowe = *Miriquidica plumbeoatra* (Coppins & Fryday 2006b)  
 furvella Nyl. ex Mudd = [Lambiella furvella](#)  
 fusca (Schaerer) Th. Fr. = *Bryobilimbia hypnorum*  
 fuscescens Sommerf. = *Lecanora fuscescens*  
 fuscoatrina Hertel & Leuckert (Hertel & Printzen 2004) = *L. cascadiensis* (Hutten et al. 2013)  
 fuscocinerea Nyl. = *Schaereria fuscocinerea*  
 fuscorubens (Nyl.) Nyl. (Fink 1935) = *Clauzadea monticola* (Scholz 2000)  
 garovaglioii Schaerer = *Miriquidica garovaglioii*  
 gelatinosa Flörke = *Trapeliopsis gelatinosa*  
 geophana Nyl. = *Steinia geophana*  
 glaucophaea Körber = *Porpidia rugosa* (Fryday 2005)  
 glaucopholis Nyl. = *Trapeliopsis glaucopholis*  
 glebulosa (Fr.) Clem. = *Trapeliopsis wallrothii*, but misidentifications for North America  
 globulosa Flörke = *Biatora globulosa*  
 globifera Ach. = *Psora globifera*  
 glomerulosa (DC.) Steudel = *Lecidella euphorea*  
 goniophila auct. = *Lecidella anomaloides*  
 granosa Tuck. = *Bacidia granosa* (Ekman 2014)  
 granulata H. Magn. = *Lecidella granulata*  
 granulosa (Hoffm.) Ach. = *Trapeliopsis granulosa*  
 granulosa var. phyllizans Zahlbr. = *Trapeliopsis glaucopholis*  
 gregaria G. Merr. = *Trapelia glebulosa*  
 grisella Flörke ex Schaerer = *L. fuscoatra*  
 griseoatra (Flotow) Schaerer (Fink 1935) = *Miriquidica griseoatra* (Santesson et al. 2004)  
 gyrodes H. Magn. = *Fuscidea recensa* var. *arcuatula*  
 gyalizella Nyl. = *Gyallecta gyalizella* (Baloch et al. 2013a)  
 gyrophoroides Sprengel (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)  
 hebesceus Nyl. = *Porpidia albocaerulescens* (Lendemer 2004a)  
 helvola (Körber) Th. Fr. = *Biatora helvola*  
 helvola var. longispora Degel. = *Biatora longispora*  
 heppii R. A. Anderson & W. A. Weber = *Lecidella wulfenii*  
 homalodes Nyl. = *L. tessellata* Flörke (Hertel 1991)  
 humilis J. Lowe = *Miriquidica plumbeoatra*  
 humosa (Hoffm.) Nyl. = *Placynthiella uliginosa*  
 hypnorum Lib. = *Bryobilimbia hypnorum*  
 hypocrita A. Massal. = *Farnoldia hypocrita*  
 hypopta Ach. = *Lecanora hypopta*  
 ictérica (Mont.) Taylor = *Psora ictérica*  
 impavida Th. Fr. = [Lambiella impavida](#)  
 instrata Nyl. = *Miriquidica instrata*  
 insularis Nyl. = *Lambiella insularis*  
 internectens Nyl. = *Biatora subduplex*  
 intrudens H. Magn. = *Carbonia intrudens* (Dillman et al. 2012)  
 intumescens (Flotow) Nyl. = *Lambiella insularis*  
 jurana Schaerer = *Farnoldia jurana*  
 kochiana Hepp = *Fuscidea kochiana*, but apparently a misidentification for N.A. (Fryday 2008)  
 kochiana var. subreagens H. Magn. = *Fuscidea scrupulosa*  
 lacus-crateris H. Magn. = *Lecidella stigmatea*  
 lapicida var. pantherina Ach. (Hertel & Andreev 2003) = *L. lactea* (Coppins 2002)  
 latypea auct. non Ach. = *Lecidella carpathica*  
 latypea Ach. = *L. plana*  
 latypiza Nyl. = *Lecidella carpathica*  
[lepidastra](#) Tuck. = [Buellia lepidastra](#)  
 leptoboloides Nyl. = *L. laboriosa*  
 leucophaea (Flörke ex Rabenh.) Nyl. = *Miriquidica leucophaea*  
 leucophaeoides Nyl. = *Miriquidica leucophaeoides*

limborina (Nyl.) Lamy = Rimularia limborina  
 limitata auct. = Lecidella elaeochroma  
 limosa Ach. = Protomicarea limosa  
 lithospersa Zahlbr. = Farnoldia hypocrita  
 lopadioides (Th. Fr.) Grumann = Ainoa mooreana, [but a misidentification for North America](#)  
 lowensis H. Magn. = Fuscidea lowensis  
 lucida (Ach.) Ach. = Psilolechia lucida  
 lugubris Sommerf. = Ropalospora lugubris  
 lulensis (Hellbom) Stizenb. = Miriquidica lulensis  
 lurida (Ach.) DC. = Romjularia lurida  
 luridella Tuck. = Psora luridella  
 lynceola Th. Fr. = Micarea lynceola, but a misidentification for N. America (Coppins & Fryday 2006b)  
 lynceola auct. N. Am. = Brinaria bauschiana (Coppins & Fryday 2006b)  
 lyngaeana Zahlbr. = Adelolecia pilati  
 macrocarpa (DC.) Steudel = Porpidia macrocarpa  
 macrocarpa var. trullisata (Arnold) Mig. = Porpidia zeoroides  
 mamillaria Tuck. (Mohr 1901) Apparent typographical error for L. mamillana  
 manni Tuck. (Esslinger & Tucker 2009) Orthographic variant of L. mannii  
 marciensis J. Lowe = Miriquidica pycnocarpa (Coppins & Fryday 2006b)  
 marginata Schaerer = Lecanora marginata  
 marylandensis H. Magn. = Miriquidica leucophaea (Coppins & Fryday 2006b)  
 medialis Tuck. ex Nyl. = Bacidia medialis (Ekman 1996)  
 meiocarpa Nyl. = Biatora meiocarpa  
 meiocarpa var. tacomensis Printzen & Tønsberg = Biatora meiocarpa var. tacomensis  
 melancheima Tuck. = Ramboldia elabens  
 melinodes (Körber) H. Magn. ex Lynge = Porpidia melinodes  
 micacea Körber = Lecidella stigmataea  
 michenerii (Tuck.) Identity uncertain (Esslinger & Tucker 2009)  
 minuta (Nyl.) Nyl. = Biatora meiocarpa  
 misella (Nyl.) Nyl. = Micarea misella  
 mollis (Wahlenb.) Nyl. = Fuscidea mollis  
 monticola Ach. = Clauzadea monticola  
 mundula Müll. Arg. = Lecanora oreinodes (Rambold 1989)  
 myriocarpella (G. Merr.) Zahlbr., nom. illeg., probable synonym of Lecidea enalla (Printzen 1995)  
 myriocarpoides Nyl. = L. plebeja  
 neglecta Nyl. (Fink 1935) = Lepraria neglecta  
 nemoralis J. Lowe = Bryobilimbia ahlesii var. nemoralis  
 nivalis Anzi = Farnoldia micropsis  
 novomexicana (B. de Lesd.) W. A. Weber ex R. A. Anderson = Psora nipponica  
 oblongula H. Magn. = Caloplaca oblongula  
 obtegens Th. Fr. = Trapelia obtegens  
 occidentalis Lynge = L. tessellata (Hertel 1991)  
 ochrococca Nyl. = Protoparmelia ochrococca  
 ochrophora Nyl. = Piccolia ochrophora  
 oligotropha J. R. Laundon = Placynthiella oligotropha  
 olivacea (Hoffm.) A. Massal. = Lecidella elaeochroma  
 oreinodes (Körber) W. A. Weber & Hertel = Lecanora oreinoides  
 ornata (Sommerf.) Hue = Trapelia glebulosa  
 orosthea (Ach.) Ach. = Lecanora orosthea  
 ostreata (Hoffm.) Schaerer = Hypocenomyce scalaris  
 \*oxyspora (Tul.) Nyl. = Phacopsis oxyspora  
 paddensis (Tuck.) Zahlbr. = Lecanora paddensis (McCune et al. 2014b)  
 pallida Th. Fr. = Pilophorus dovrensis  
 panaeola (Ach.) Ach. = Amygdalaria panaeola  
 pantherina (Ach.) Th. Fr. = L. lactea  
 parasema (Ach.) Ach. (Fink 1935) = Lecidella elaeochroma (Scholz 2000)



parasemella Nyl. = *Schaereria parasemella*  
 parvifolia Pers. = *Phyllopsora parvifolia*  
 "pelobotrion" = *Amygdalaria pelobotryon*  
 pelobotrya (Wahlenb.) Leighton = *Amygdalaria pelobotryon*  
 petri (Tuck.) Zahlbr. = *Romjularia lurida*  
 phaeophora Stizenb. = *Lecanora phaeophora*  
 phylliscina Nyl. = *Porpidia macrocarpa*  
 pilati (Hepp) Körber = *Adelolecia pilati*  
 placidensis H. Magn. = *Lecanora placidensis*  
 planetica Tuck. ex Willey = *Leimonis erratica*  
 platycarpa Ach. = *Porpidia macrocarpa*  
 plumbeoatra Vainio = *Miriquidica plumbeoatra*  
 polycarpa Flörke (Fink 1935) = *L. lapicida* (Santesson et al. 2004)  
 porphyrospoda (Anzi) Th. Fr. = *Myochroidea porphyrospoda*  
 praeruptorum Du Rietz & H. Magn. = *Fuscidea praeruptorum*  
 prasinula (Wedd.) B. de Lesd. = *Lecidella scabra*  
 pringlei Tuck. = *Lecanora pringlei*  
 pruinosa Ach. = *L. lithophila*  
 pulcherrima Vainio = *Anamylopsora pulcherrima*  
 pullata (Norman) Th. Fr. (Jørgensen et al. 2002) = *Frutidella pullata*  
 pullula (Tuck.) Zahlbr. = *Lecanora anopta*  
 punctella (Willey) Zahlbr. = *Micarea rhabdogena*  
 purissima Darb. = *Lecanora marginata*  
[pyncocarpa \(Körber\) Ohlert = Miriquidica pyncocarpa](#)  
 quadricolor (Dickson) Borrer = *Trapeliopsis granulosa*  
 querneae (Dickson) Ach. = *Pyrrhospora querneae*  
 ramulicola H. Magn. = *Lecanora cadubriae*  
 recedens Nyl. = a non-lichenized fungus  
 recensa Stirton = *Fuscidea recensa*  
 rhaetica Hepp ex Th. Fr. = *Farnoldia micropsis*  
 rivulosa Ach. = *Fuscidea cyathoides*, but a misidentification for North America  
 rubiformis (Ach.) Wahlenb. = *Psora rubiformis*  
 rufofusca (Anzi) Nyl. = *Myochroidea rufofusca*  
 rufonigra (Tuck.) Nyl. = *Psorula rufonigra*  
 rugosa J. Lowe = *Schaereria cinereorufa* (Coppins & Fryday 2006b)  
 russellii Tuck. = *Psora russellii*  
 russula Ach. = *Ramboldia russula*  
 sanguineoatra sens. Nyl. = *Bryobilimbia hypnorum*  
 santae-monicae H. Magn. = *L. laboriosa* (Knudsen & Lendemer 2005a)  
 santensis Tuck. = *Phyllopsora santensis*  
 saxosa R. A. Anderson = *L. syncarpa* (Hertel 1995, Leuckert & Hertel 2003)  
 scabra Taylor = *Lecidella scabra*  
 scalaris (Ach. ex Lilj.) Ach. = *Hypocenomyce scalaris*  
 schizopeltica Hertel & Leuckert (Hertel & Printzen 2004, Hertel & Leuckert 2011) = *L. truckeei* (Lendemer & Knudsen 2007)  
 scholanderi Lynge = *Toninia tristis* subsp. *scholanderi*  
 scotopholis (Tuck.) Herre = *Miriquidica scotopholis*  
 scrobiculata Th. Fr. = *Lecanora scrobiculata* (Elix & Øvstedal 2004)  
 scrupulosa (Eckfeldt) H. Magn. = *Fuscidea scrupulosa*  
 shushanii J. W. Thomson = *Lecidea aglaeida* (Haugan & Timdal 1994) = *Calvitimela aglaea* (Hertel & Andreev 2003)  
 soledifera J. Lowe = *Porpidia macrocarpa* (Coppins & Fryday 2006b)  
 solediza Nyl. = *Porpidia tuberculosa*  
 soledizodes (Lamy ex Nyl.) Vainio = *Porpidia soledizodes*  
 speirea (Ach.) Ach. = *Porpidia speirea*  
 sphacelata Th. Fr. = [Lambiella sphacelata](#)

stenotera (Nyl.) Nyl. = *L. alpestris*  
 steriza (Ach.) Vainio = *Porpidia macrocarpa*  
 stigmatea Ach. = *Lecidella stigmatea*  
 suballinita Nyl. = *Micarea ternaria* (Nyl.) Vězda (Printzen 1995)  
 subauriculata B. de Lesd. non Lynge = *Lecidella* spp.  
 subauriculata Lynge non B. de Lesd. = *Adelolecia pilati*  
 subcinnabarina Tønsberg = *Pyrrhospora subcinnabarina*  
 subcontinuior B. de Lesd. = *Carbonea latypizodes*  
 subduplex (Nyl.) Nyl. = *Biatora subduplex*  
 suberratica J. Lowe = *Micarea erratica*  
 sublimosa Nyl. = *Megalaria jemtlandica*  
 subplebeia Nyl. = *Carbonea latypizodes*  
 subplebeja Vainio This name (a corticolous Brazilian taxon) was first added to the North American checklist in the 1960 Hale & Culberson version, apparently erroneously replacing *L. subplebeia* Nyl. (a saxicolous California taxon) which had been in the 1956 version.  
 subplumbea Anzi = (?) *Miriquidica griseoatra*  
 subramosa J. Lowe = *Toninia squalecens* (Coppins & Fryday 2006b)  
 subsimplex H. Magn. = *Porpidia subsimplex*  
 subsorediza Lynge = *Bellemerea subsorediza*  
 subtilis Degel. = *Lecidea varians* (Lendemer & Harris 2014c)  
 sulphurea (Hoffm.) Wahlenb. = *Lecanora sulphurea*  
 sylvana (Körber) Th. Fr. = *Biatoraa globulosa*  
 sylvicola Flotow = *Brianaria sylvicola*  
 symmicta (Ach.) Ach. = *Lecanora symmicta*  
 symmictella Nyl. (Spribille & Björk 2008) = *Puttea caesia* (Dillman et al. 2012)  
 templetonii Taylor = *Bryobilimbia hypnorum*  
 tenebrosa Flotow = *Schaereria fuscocinerea*  
 tennesseensis Nyl. = *Lecanora oreinoides*  
 tessalina Tuck. = *Lecanora oreinoides*  
 testacea (Hoffm.) Ach. = *Psora testacea* Not included in the North American flora.  
 texana W. A. Weber = *Xanthopsorella texana*  
 tornoënsis Nyl. = *Japewia tornoënsis*  
 trochodes (Taylor ex Leighton) Crombie = *Rimularia limborina*  
 tuckeii Herre (Fink 1935) Apparent typographic error for *L. truckeei*  
 tumida A. Massal. = *Porpidia tuberculosa*  
 uliginosa (Schrader) Ach. = *Placynthiella uliginosa*  
 ultima Th. Fr. = *Cephalophysia leucospila*  
 umbonella Nyl. = *Cecidonia umbonella*  
 vacciniicola Tønsberg = *Biatora vacciniicola*  
 vernalis (L.) Ach. = *Biatora vernalis*  
 vernicoma Tuck. = *Gassicurtia vernicoma*  
 violascens H. Magn. = *L. laboriosa* (Knudsen & Lendemer 2005a)  
 viridans (Flotow) Lamy = *Lecidella viridans*  
 viridescens (Schrader) Ach. = *Trapeliopsis viridescens*  
 \*vitellinaria Nyl. = *Carbonea vitellinaria*  
 vorticosa (Flörke) Körber = *Carbonea vorticosa*  
 vulgata Zahlbr. = *Lecidella stigmatea*  
 wallrothii Flörke ex Sprengel = *Trapeliopsis wallrothii*, but misidentifications for North America  
 washingtonensis H. Magn. = *L. cascadiensis*  
 wulfenii (Hepp) Arnold = *Lecidella wulfenii*  
 xanthococca Sommerf. = *Pycnora xanthococca*  
 ypocrita A. Massal. = *Farnoldia hypocrita*  
 zahlbruckneri Fink = *Lecidella latypiza* (Knoph & Leuckert 1994)

## **LECIDELLA** Körber

**anomaloides** (A. Massal.) Hertel & H. Kiliass Syn.: *Lecidea goniophila* auct.



**asema** (Nyl.) Knoph & Hertel Syn.: *Lecidea catalinaria*  
**bullata** Körber  
**carpathica** Körber Syns.: *Lecidea latypiza*, *L. carpathica*, *L. latypea* auct., *L. evansi*, *L. albonigra*  
**chiricahuana** Knoph & Leuckert (Knoph & Leuckert 2004)  
**dimelaenophila** Hertel  
**effugiens** (Nilson) Knoph & Hertel Syn.: *Lecidea albidocinerella*  
**elaeochroma** (Ach.) M. Choisy Syns.: *Lecidea elaeochroma*, *L. olivacea*, *L. limitata* auct.  
**enteroleucella** (Nyl.) Hertel  
**euphorea** (Flörke) Hertel Syns.: *Lecidea euphorea*, *L. glomerulosa*  
**flavosorediata** (Vězda) Hertel & Leuckert  
**granulata** (H. Magn.) R. C. Harris Syn.: *Lecidea granulata*  
**granulosula** (Nyl.) Knoph & Leuckert (Knoph & Leuckert 2004)  
**latypiza** (Nyl.) M. Choisy  
**laureri** (Hepp ex Th. Fr.) Körber (Goward et al. 1996)  
**meiococca** (Nyl.) Leuckert & Hertel  
**nashiana** Knoph & Leuckert (Knoph & Leuckert 2004)  
**patavina** (A. Massal.) Knoph & Leuckert Syns.: *Lecidea acrocyanea*, *L. alaiensis*, *L. endolitheia*  
**pulveracea** (Flörke ex Th. Fr.) P. Sydow (Laundon 2005)  
**scabra** (Taylor) Hertel & Leuckert Syns.: *Lecidea scabra*, *L. prasinula*  
**stigmathea** (Ach.) Hertel & Leuckert Syns.: *Bacidia arthoniza*, *Lecidea micacea*, *L. stigmathea*, *L. vulgata*, *L. lacus-crateris*  
**[Lecidea subauriculata** B. de Lesd. non Lynge]  
**subviridis** Tønsberg (Coppins & Fryday 2006b)  
**tumidula** (A. Massal.) Knoph & Leuckert (Knoph & Leuckert 2004)  
**viridans** (Flotow) Körber Syn.: *Lecidea viridans*  
**wulfenii** (Hepp) Körber Syns.: *Lecidea heppii*, *L. wulfenii*  
*alaiensis* (Vainio) Hertel = *L. patavina*  
*chodatii* (Samp.) Knoph & Leuckert = *L. granulosula*  
*elaeochromoides* (Nyl.) Knoph & Hertel = *L. asema*  
*enteroleuca* auct. = various *Lecidella* spp.  
*glomerulosa* (DC.) M. Choisy = *L. euphorea*  
*goniophila* auct. = *L. anomaloides*  
*inamoena* (Müll. Arg.) Hertel = *L. patavina*  
*incongruella* (Vainio) Hertel & Leuckert = *L. effugiens placidensis* (H. Magn.) R. C. Harris = *Lecanora placidensis* (Knoph & Leuckert 1994)  
*prasinula* (Wedd.) Hertel = *L. scabra*  
*spitsbergensis* (Lynge) Hertel & Leuckert = *L. patavina*  
*subincongrua* (Nyl.) Hertel & Leuckert var. *elaeochromoides* (Nyl.) Hertel & Leuckert = *L. asema*

#### **LECIDOMA** Gotth. Schneider & Hertel

**demissum** (Rutstr.) Gotth. Schneider & Hertel Syns.: *Lecidea demissa*, *Lepidoma demissum*, *Psora demissa*

#### **LECIOGRAPHA** A. Massal. = **OPEGRAPHA**

\**glaucomaria* (Nyl.) H. Olivier = *Phacographa glaucomaria*  
 \**glaucomarioidea* (Willey) Fink (Fink 1935) = *Dactylospora glaucomarioides*  
 \**inspersa* (Tul.) Rehm = possibly *Dactylospora parasitica*  
 \**lamyi* (O. J. Rich. ex Nyl.) Sacc. & D. Sacc. = *Opegrapha lamyi*  
 \**parasitica* A. Massal. = *Opegrapha rupestris*  
 \**pertusariicola* (Willey ex Tuck.) Fink = *Dactylospora pertusariicola*  
 \**f* (Fr.) Körber = *Dactylospora urceolata*

#### **LECIOPHYSMA** Th. Fr.

**finmarkicum** Th. Fr.  
**furfurascens** (Nyl.) Gyelnik

**saximontana** (T. Sprib., P. M. Jørg. & M. Schultz) P. M. Jørg., Wedin & S. Ekman Syn.: Santessoniella saximontana (Ekman et al. 2014)

**LEIGHTONIOMYCES** D. Hawksw. & B. Sutton

#**phillipsii** (Berk. & Leighton) D. Hawksw. & B. Sutton (McCune & Stone 2009)

**LEIODERMA** Nyl.

**cherokeense** P. M. Jørg. (Jørgensen & Tønsberg 2005)

**sorediatum** D. J. Galloway & P. M. Jørg.

**LEIMONIS** R. C. Harris (Harris 2009)

**erratica** (Körber) R. C. Harris & Lendemer Syns.: Lecidea chalybeiformis, L. erratica, L. suberratica, Micarea erratica

**LEIORREUMA** Eschw.

**exaltatum** (Mont. & Bosch) Staiger Syn.: Graphis diversa, Phaeographis exaltata (Staiger 2002)

**explicans** (Fink) Lendemer Syn.: Phaeographina explicans (Lendemer & Knudsen 2008b)

**patellulum** (Fée) Staiger Syn.: Phaeographis patellula (Esslinger & Tucker 2009)

**sericeum** (Eschw.) Staiger Syn.: Phaeographis sericea (Staiger 2002)

**LEMMOPSIS** (Vainio) Zahlbr.

**arnoldiana** (Hepp) Zahlbr. (Schultz 2002d)

**LEMPHOLEMMA** Körber

**chalazanum** (Ach.) B. de Lesd. Syn.: Psorotichia segregata, Collemopsis segregata (Schultz 2007b)

**cladodes** (Tuck.) Zahlbr.

**intricatum** (Arnold) Zahlbr.

**isidiodes** (Nyl. ex Arnold) H. Magn.

**oblique-peltatum** (Eschw.) C. W. Dodge

**polyanthes** (Bernh.) Malme Syn.: Collema myriococcum

**radiatum** (Sommerf.) Henssen

**umbella** (Tuck.) Zahlbr. Syn.: Omphalaria umbella

**vesiculiferum** Henssen

albonigrum H. Magn. = L. cladodes

fennicum (Räsänen) Degel. (Goward 1999) = L. intricatum

myriococcum (Ach.) Th. Fr. = L. polyanthes

**LEPIDOCOLLEMA** Vainio

**marianum** (Fr.) P. M. Jørg. Syns.: Pannaria mariana, Parmeliella mariana (Ekman et al. 2014)

Uncertain for North America (Jørgensen 2000c)

**stylophorum** (Vainio) P. M. Jørg. Syns.: Pannaria stylophora, Parmeliella stylophorum (Ekman et al. 2014)

**LEPIDOMA** (Ach.) Gray

demissum (Rutstr.) M. Choisy = Lecidoma demissum

**LEPRARIA** Ach.

**albicans** (Th. Fr.) Lendemer & Hodkinson Syns.: Leprocaulon albicans, Stereocaulon albicans (Lendemer & Hodkinson 2013)

**arbuscula** (Nyl.) Lendemer & Hodkinson Syns.: Leprocaulon arbuscula, Stereocaulon arbuscula (Lendemer & Hodkinson 2013)

**aurescens** Orange & Wolseley (Lendemer 2010a)

**barbatica** Lendemer (Lendemer 2010a)

**brodoi** Lendemer & Tønsberg (Lendemer & Tønsberg 2014)

**caesiella** R. C. Harris (Lendemer 2005a)

**cryophila** Lendemer (Lendemer 2010a)



**diffusa** (J. R. Laundon) Kukwa Syn.: *Leproloma diffusum* (Kukwa 2002)  
**disjuncta** Lendemer (Lendemer 2010a)  
**eburnea** J. R. Laundon  
**elobata** Tønsberg (Tønsberg 1997)  
**finkii** (B. de Lesd.) R. C. Harris (Lendemer 2013b) Syns: *Crocynia aliciae*, *C. americana*  
**friabilis** Lendemer, K. Knudsen & Elix (Lendemer et al. 2008b)  
**gracilescens** (Nyl.) Lendemer & Hodkinson Syn.: *Leprocaulon gracilescens* (Lendemer & Hodkinson 2013)  
**harrisiana** Lendemer (Lendemer 2012a)  
**hodkinsoniana** Lendemer (Lendemer 2011b)  
**humida** Slav.-Bayr. & Orange (Lendemer 2013a, 2013b)  
**jackii** Tønsberg (Kümmerling et al. 1995)  
**lanata** Tønsberg (Tønsberg 2007)  
**lecanorica** Tønsberg (Tønsberg 2004b)  
**leprolomopsis** Diederich & Sérus. (Lendemer 2013b)  
**membranacea** (Dickson) Vainio Syn.: *Leproloma membranaceum*, *Amphiloma lanuginosum* (Kukwa 2002)  
**neglecta** (Nyl.) Erichsen Syn.: *Crocynia neglecta*  
**nivalis** J. R. Laundon  
**normandinoides** Lendemer & R. C. Harris (Lendemer & Harris 2007)  
**oxybapha** Lendemer (Lendemer 2012b)  
**pacifica** Lendemer (Lendemer 2011b)  
**rigidula** (B. de Lesd.) Tønsberg  
**squamatica** Elix (Lendemer 2008)  
**subalbicans** (I. M. Lamb) Lendemer & Hodkinson Syns.: *Leprocaulon subalbicans*, *Stereocaulon subalbicans* (Lendemer & Hodkinson 2013)  
**torii** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009a)  
**vouauxii** (Hue) R. C. Harris Syn.: *Leproloma vouauxii* (Kukwa 2002)  
**xanthonica** Lendemer (Lendemer 2010a)  
**xerophila** Tønsberg (Tønsberg 2004b)  
*adhaerens* K. Knudsen, Elix & Lendemer (Knudsen et al. 2007) = *Leprocaulon adhaerens*  
*aeruginosa* auct. = misidentification for North America  
*aeruginosa* (Weiss) Sm. = not a lichen-forming fungus  
*alpina* (B. de Lesd.) Tretiach & Baruffo (Knudsen & Elix 2007a) = *L. neglecta* (Lendemer 2013a, 2013b)  
*arctica* (Lynge) Wetmore = *L. vouauxii*  
*borealis* Loht. & Tønsberg = *L. neglecta* (Lendemer 2013b)  
*cacuminum* sensu J. R. Laundon = *L. neglecta* (Lendemer 2013a, 2013b)  
*cacuminum* sensu Loht. = *L. neglecta* (Lendemer 2013a, 2013b)  
*caesioalba* (B. de Lesd.) J. R. Laundon = *L. neglecta* (Lendemer 2013a, 2013b)  
*candelaris* (L.) Fr. = *Chrysothrix candelaris*  
*chlorina* (Ach.) Ach. = *Chrysothrix chlorina*  
*citrina* (Schaerer) Rabenh. = *Chrysothrix candelaris*  
*crassissima* (Hue) Lettau = misidentification for North America (Lendemer 2011b)  
*crassissima* var. *isidiata* Llimona = misidentification for North America (Lendemer 2011b)  
*diffusa* (J. R. Laundon) Kukwa var. *chrysodetoides* (J. R. Laundon) Kukwa = *L. diffusa* (Lendemer 2013a, 2013b)  
*flava* (Schreber) Sm. = *Chrysothrix candelaris*  
*frigida* J. R. Laundon = *L. eburnea* (Tønsberg 2004b)  
*gelida* Tønsberg & Zhurb. (Kukwa & Zhurbenko 2010) = *Lepraria neglecta* (Lendemer 2013b)  
*incana* (L.) Ach. = misidentification for North America (Lendemer 2011b)  
*lesdainii* (Hue) R. C. Harris = *Botryolepraria lesdainii*  
*lobificans* auct. N.A. non Nyl. = *L. finkii* (Lendemer 2013b)  
*moroiziana* Lendemer (Lendemer 2010a) = *Andreimyces morozianus*  
*salazinica* Tønsberg (Tønsberg 2007) = *L. elobata* (Lendemer 2013a, 2013b)  
*santamonicae* K. Knudsen & Elix (Knudsen & Elix 2007b) = *Leprocaulon santamonicae*

terricola Lendemer (Lendemer 2010a) = Leprocaulon terricola  
texta K. Knudsen, Elix & Lendemer (Knudsen & Elix 2007a) = Leprocaulon textum  
zonata Brodo = L. neglecta

#### **LEPROCAULON** Nyl. ex Lamy

**adhaerens** (K. Knudsen, Elix & Lendemer) Lendemer & Hodkinson Syn.: Lepraria adhaerens (Lendemer & Hodkinson 2013)  
**americanum** Lendemer & Hodkinson (Lendemer & Hodkinson 2013)  
**knudsenii** Lendemer & Hodkinson (Lendemer & Hodkinson 2013)  
**santamonicae** (K. Knudsen & Elix) Lendemer & Hodkinson Syn.: Lepraria santamonicae (Lendemer & Hodkinson 2013)  
**terricola** (Lendemer) Lendemer & Hodkinson Syn.: Lepraria terricola (Lendemer & Hodkinson 2013)  
**textum** (K. Knudsen, Elix & Lendemer) Lendemer & Hodkinson Syn.: Lepraria texta (Lendemer & Hodkinson 2013)  
albicans (Th. Fr.) Nyl. = Lepraria albicans  
arbuscula (Nyl.) Nyl. = Lepraria arbuscula  
gracilescens (Nyl.) I. M. Lamb & A. Ward = Lepraria gracilescens  
microscopicum (Vill.) Gams ex D. Hawksw. = L. quisquiliare, but North American records are L. americanum (Lendemer & Hodkinson 2013)  
pseudoarbuscula (Asahina) I. M. Lamb & A. Ward = Lepraria subalbicans for North American records  
quisquiliare (Leers) M. Choisy = misidentification for North America  
subalbicans (I. M. Lamb) I. M. Lamb & A. Ward = Lepraria subalbicans

#### **LEPROCOLLEMA** Vainio

americanum Vainio Apparently absent from N.A. north of Mexico (Schultz 2007a)

#### **LEPROLOMA** Nyl. ex Crombie = LEPRARIA (Kukwa 2002)

angardianum (Øvstedal) J. R. Laundon = Lepraria neglecta  
cacuminum (A. Massal.) J. R. Laundon = Lepraria neglecta  
diffusum J. R. Laundon var. diffusum = Lepraria diffusa  
diffusum J. R. Laundon var. chrysodetoides J. R. Laundon (Goward et al. 1996) = Lepraria diffusa  
membranaceum (Dickson) Vainio = Lepraria membranacea  
"membranaceum var. chrysodetoides" Removed as a typographical error here  
vouauxii (Hue) J. R. Laundon = Lepraria vouauxii

#### **LEPROPLACA** (Nyl.) Hue (Arup et al. 2013)

**cirrochroa** (Ach.) Arup, Frödén & Söchting Syn.: Caloplaca cirrochroa  
**chrysodeta** (Vainio) J. R. Laundon ex Ahti Syn.: Caloplaca chrysodeta  
**obliterans** (Nyl.) Arup, Frödén & Söchting Syn.: Caloplaca obliterans

#### **LEPTOCHIDIUM** M. Choisy

**albociliatum** (Desm.) M. Choisy Syn.: Polychidium albociliatum, Leptogium albociliatum, L. pilosellum  
**crenatulum** (Nyl.) P. M. Jørg. (Jørgensen 2006)

#### **LEPTOGIDIUM** Nyl. (Muggia et al. 2011)

**contortum** (Henssen) T. Sprib. & Muggia (Muggia et al. 2011)  
**dendriscum** (Nyl.) Nyl. Syn.: Polychidium dendriscum  
intricatum Nyl. = Dendriscocaulon intricatum

#### **LEPTOGIUM** (Ach.) Gray

**acadiense** J. W. Hinds, F. L. Anderson & Lendemer (Stone et al. 2016)  
**adpressum** Nyl.  
**arcticum** P. M. Jørg.  
**arsenei** Sierk  
**austroamericanum** (Malme) C. W. Dodge



**azureum** (Sw. ex Ach.) Mont.  
**brebissonii** Mont.  
**burgessii** (L.) Mont.  
**byssinum** (Hoffm.) Zwackh ex Nyl.  
**chloromelum** (Ach.) Nyl.  
**compactum** D. F. Stone, F. L. Anderson & J. W. Hinds (Stone et al. 2016)  
**cookii** D. F. Stone & Lendemer (Stone et al. 2016)  
**coralloideum** (Meyen & Flotow) Vainio (Jørgensen & Nash 2004) Syn.: *Parmelia coralloideum*  
**corticola** (Taylor) Tuck.  
**crenatulum** (Nyl.) Vainio  
**cyanescens** (Rabenh.) Körber  
**digitatum** (A. Massal.) Zahlbr.  
**floridanum** Sierk  
**fusisporum** (Tuck.) C. W. Dodge  
**hibernicum** M. E. Mitch. ex P. M. Jørg. (Nealy & Anderson 2010)  
**hirsutum** Sierk  
**hypotrachynum** Müll. Arg.  
**insigne** P. M. Jørg. & Tønsberg (Jørgensen & Tønsberg 2010)  
**isidiosellum** (Riddle) Sierk  
**joergensenii** Marcelli & Kitauro (Kitauro et al. 2015)  
**juessianum** Tav. (Lendemer et al. 2008c)  
**laceroides** B. de Lesd.  
**marginellum** (Sw.) Gray  
**microstictum** Vainio  
**milligranum** Sierk  
**nanum** Herre (McCune & Rosentreter 2007)  
**papillosum** (B. de Lesd.) C. W. Dodge (Jørgensen & Nash 2004)  
**phyllocarpum** (Pers.) Mont.  
**pseudofurfuraceum** P. M. Jørg. & Wallace (Jørgensen 1997)  
**resupinans** Nyl. (Jørgensen & Nash 2004)  
**rivulare** (Ach.) Mont.  
**rugosum** Sierk  
**saturninum** (Dickson) Nyl.  
**sessile** Vainio  
**stipitatum** Vainio  
**albociliatum** Desm. = *Leptochidium albociliatum*  
**americanum** Degel. = *L. laceroides*  
**amphineum** Ach. ex Nyl. = *L. byssinum*  
**apalachense** (Tuck.) Nyl. = *Scytinium apalachense* (Otálora et al. 2014)  
**aquale** (Arnold) P. M. Jørg. (Jørgensen & Tønsberg 1999) = *Scytinium aquale* (Otálora et al. 2014)  
**aragonii** Otálora (Otálora et al. 2008) = *Scytinium aragonii* (Otálora et al. 2014)  
**arizonicum** Zahlbr. = *Scytinium juniperinum*  
**biatorinum** (Nyl.) Leighton (Jørgensen & Tønsberg 1999) = *L. nanum*, for North American report (McCune & Rosentreter 2007)  
**bullatum** (Sw. in Ach.) Nyl. (Fink 1935) Probable misidentification for North America (Esslinger & Tucker 2009)  
**burnetiae** C. W. Dodge Misidentifications for North America (Stone et al. 2016)  
**burnetiae** C. W. Dodge var. **hirsutum** (Sierk) P. M. Jørg. = *L. hirsutum*  
**caesiellum** Tuck. = *L. byssinum*  
**caesium** (Ach.) Vainio = *L. cyanescens*  
**californicum** Tuck. = *Scytinium californicum* (Otálora et al. 2014)  
**cellulosum** P. M. Jørg. & Tønsberg (Jørgensen & Tønsberg 1999) = *Scytinium cellulosum* (Otálora et al. 2014)  
**contortum** Sierk = *Scytinium contortum* (Otálora et al. 2014)  
**corniculatum** (Hoffm.) Minks = *Scytinium palmatum* (Otálora et al. 2014)  
**crenatellum** (Nyl.) Tuck. = *L. rivulare*

dactylinum Tuck. = *Scytinium dactylinum* (Otálora et al. 2014)  
 denticulatum Nyl. = misidentification for North America (Kitaura et al. 2015)  
 denticulatum sensu Sierk (1964) = *L. joergensenii* (Kitaura et al. 2015)  
 erectum Sierk = *Scytinium erectum* (Otálora et al. 2014)  
 fragile (Tayl.) Nyl (Fink 1935) = *Scytinium fragile* Taylor, but a likely misidentification for North America (Degelius 1954)  
 furfuraceum (Harm.) Sierk = *L. pseudofurfuraceum* (for North American reports; Jørgensen 1997)  
 gelatinosum (With.) J. R. Laundon = *Scytinium gelatinosum* (Otálora et al. 2014)  
 hildenbrandii (Garov.) Nyl. = a European species, a misidentification for North America (Sierk 1964)  
 imbricatum P. M. Jørg. = *Scytinium imbricatum* (Otálora et al. 2014)  
 inflexum Nyl. = *L. burgessii* (fide Jørgensen)  
 intermedium (Arnold) Arnold = *Scytinium intermedium* (Otálora et al. 2014)  
 intricatulum Nyl. (Fink 1935) = *Scytinium teretiusculum* (Sierk 1964)  
 juniperinum Tuck. = *Scytinium juniperinum* (Otálora et al. 2014)  
 lacerum (Sw.) Gray = *Scytinium lichenoides*  
 lichenoides (L.) Zahlbr. = *Scytinium lichenoides* (Otálora et al. 2014)  
 lividofuscum (Florke ex Schlecht.) Flotow = *Scytinium tenuissimum*  
 microdium (Nyl.) Zahlbr. = *Scytinium plicatile* (Sierk 1964)  
 minutissimum (Flörke) Fr. = *Scytinium subtile*  
 minutissimum auct. = *Scytinium intermedium*  
 muscicola (Sw.) Fr. = *Polychidium muscicola*  
 palmatum (Hudson) Mont. (Hoffman & Hafellner 2000; Santesson et al. 2004) = *Scytinium palmatum* (Otálora et al. 2014)  
 papillosum (B. de Lesd.) C. W. Dodge North American reports refer to *L. pseudofurfuraceum*  
 parculum Nyl. = *Scytinium parculum* (Otálora et al. 2014)  
 perminutum Hedr. = *Scytinium subtile*  
 pilosellum G. Merr. = *Leptochidium albociliatum*  
 platynum (Tuck.) Herre = *Scytinium platynum* (Otálora et al. 2014)  
 plectenchymum Fink = *Scytinium juniperinum*  
 plicatile (Ach.) Leighton = *Scytinium plicatile* (Otálora et al. 2014)  
 polycarpum P. M. Jørg. & Goward = *Scytinium polycarpum* (Otálora et al. 2014)  
 pulchellum (Ach.) Nyl. = *Collema pulchellum*  
 pulvillus Tuck. (Fink 1935) Possible synonym of *Scytinium lichenoides* (Sierk 1964)  
 rhyarodes Nyl. (Fink 1935) = *Scytinium callopismum*  
 rivale Tuck. = *Scytinium rivale* (Otálora et al. 2014)  
 schraderi (Bernh.) Nyl. = *Scytinium schraderi* (Otálora et al. 2014)  
 scotinum (Ach.) Fr. = *Scytinium gelatinosum* (Santesson et al. 2004)  
 sinuatum (Hudson) A. Massal. = *Scytinium gelatinosum*  
 siskiyouensis D. F. Stone & Ruchty (Stone & Ruchty 2008) = *Scytinium siskiyouensis* (Otálora et al. 2014)  
 subaridum P. M. Jørg. & Goward = *Scytinium subaridum* (Otálora et al. 2014)  
 subtile (Schrader) Torss. = *Scytinium subtile* (Otálora et al. 2014)  
 tacomae P. M. Jørg. & Tønsberg (Jørgensen & Tønsberg 1999) = *Scytinium tacomae* (McCune et al. 2014b)  
 tenuissimum (Dickson) Körber = *Scytinium tenuissimum* (Otálora et al. 2014)  
 teretiusculum (Wallr.) Arnold = *Scytinium teretiusculum* (Otálora et al. 2014)  
 tremelloides auct. = *L. cyanescens*  
 turgidum (Ach.) Crombie (McCune & Rosentreter 2007) = *Scytinium turgidum* (Otálora et al. 2014)

#### **LEPTORHAPHIS** Körber

**atomaria** (Ach.) Szatala  
 #**contorta** Degel.  
 #**epidermidis** (Ach.) Th. Fr.  
**lucida** Körber  
 +**parameca** (A. Massal.) Körber  
 quercus (Beltr.) Körber = identity uncertain



**LEPTOSPHAERULINA** McAlpine

\***peltigerae** (Fuckel) Riedel

**LEPTOTREMA** Mont. & Bosch (Frisch 2006)

**aubertianum** (Mont.) Fink = *Stegobolus aubertianus*  
**glaucescens** (Nyl.) Müll. Arg. = *Leucodecton glaucescens*  
**heterosporum** (C. Knight ex F. M. Bailey) Zahlbr. = *Thelotrema santense*  
**laeviusculum** (Nyl.) Zahlbr. = *Myriotrema laeviusculum*  
**lepadodes** (Tuck.) Zahlbr. = *Thelotrema monosporum*  
**monosporum** (Nyl.) Müll. Arg. = *Thelotrema monosporum*  
**obturascens** (Nyl.) Hale = *Ocellularia bahiana*  
**polycarpum** Müll. Arg. = *Leucodecton subcompunctum*  
**ravenelii** (Tuck.) Fink = [Sanguinotrema wightii](#)  
**reclusum** (Kremp.) Zahlbr. = *Myriotrema reclusum*  
**santense** (Tuck.) Zahlbr. = *Reimnitzia santensis*  
**wightii** (Taylor) Müll. Arg. (Frisch 2006) = [Sanguinotrema wightii](#) (Lücking et al. 2015)

**LETHARIA** (Th. Fr.) Zahlbr.

**columbiana** (Nutt.) J. W. Thomson  
**gracilis** Krokken ex McCune & Altermann (McCune & Altermann 2009)  
[lupina](#) Altermann, Leavitt & Goward (Altermann et al. 2016)  
**vulpina** (L.) Hue Syn.: *Evernia vulpina*  
**californica** (Lév.) Hue = *L. columbiana*  
**vulpina** (L.) Hue f. *californica* (Lév.) W. A. Weber = *L. columbiana*

**LETHARIICOLA** Grumann = **SPHAEROPEZIA** (Baloch et al. 2013b)

\***cucularis** (Norman) Lumbsch & D. Hawksw. = *Sphaeropezia cucularis*  
\***sipei** Grumann = *Sphaeropezia sipei*

**LETROUITIA** Hafellner & Bellem.

**domingensis** (Pers.) Hafellner & Bellem. Syns.: *Bombyliospora domingensis*, *Lopadium domingense*, *Heterothecium domingense*  
**parabola** (Nyl.) R. Sant. & Hafellner  
**vulpina** (Tuck.) Hafellner & Bellem. Syns.: *Lopadium vulpinum*, *Bombyliospora vulpina*

**LETTAUIA** D. Hawksw. & R. Sant.

\***cladoniicola** D. Hawksw. & R. Sant. (Esslinger & Egan 1995)  
\***santessonii** Ihlen & Tønsberg (Ihlen & Tønsberg 1996)

**LEUCOCARPIA** Vězda

**biatorella** (Arnold) Vězda (Buck & Harris 2001)  
**dictyospora** (Orange) R. Sant. (Alstrup 2004)

**LEUCODECTON** Massal. (Frisch 2006)

**compunctellum** (Nyl.) Frisch (Lücking et al. 2011b)  
**glaucescens** (Nyl.) A. Frisch Syns: *Leptotrema glaucescens*, *Myriotrema glaucescens*, *Thelotrema glaucescens* (Frisch 2006)  
**occultum** (Eschw.) A. Frisch Syn: *Myriotrema compunctum* (Frisch 2006)  
**phaeosporum** (Nyl.) Rivas Plata & Lücking (Seavey et al. 2014)  
**subcompunctum** (Nyl.) A. Frisch Syns: *Leptotrema polycarpum* (Frisch 2006), *Myriotrema subcompunctum*  
[willeyi](#) (Nyl.) R. C. Harris Syn.: *Phlyctis willeyi* (Lendemer & Harris 2014d)

**LEUCOGYROPHANA** Pouzar

\***lichenicola** Thorn, Malloch & Ginns (Thorn et al. 1998)

**LICHENOBARYA** Etayo, Diederich & Lawrey (Lawrey et al. 2015)

- \***usneae** (Etayo) Etayo, Diederich & Lawrey (Lawrey et al. 2015)

**LICHENOCHORA** Hafellner

- \***arctica** Zhurb. (Zhurbenko 2013)
- \***galligena** R. Sant. & Hafellner (Diederich 2003)
- \***lepidiotae** (Anzi) Etayo & Nav.-Ros. (Zhurbenko 2013)
- \***obscuroides** (Lindsay) Triebel & Rambold (Hoffmann & Hafellner 2000)
- \***rinodinae** Zhurb. (Zhurbenko 2013)
- \***verrucicola** (Wedd.) Nik. Hoffm. & Hafellner (Hoffmann & Hafellner 2000)
- \***weillii** (Werner) Hafellner & R. Sant.
- \***xanthoriae** Triebel & Rambold
- \***thallina** (Cooke) Hafellner = *L. obscuroides*

**LICHENOCONIUM** Petrak & H. Sydow

- \***cargillianum** (Lindsay) D. Hawksw. (Diederich 2003)
- \***christiansenii** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2004)
- \***edgewoodensis** Alstrup & M. S. Cole (Alstrup & Cole 1998)
- \***erodens** M. S. Christ. & D. Hawksw.
- \***follmannii** Kondratyuk & Galloway (Kondratyuk & Galloway 1995)
- \***laevisporum** Kalb & Hafellner (Kalb et al. 1995)
- \***lecanorae** (Jaap) D. Hawksw.
- \***lichenicola** (P. Karsten) Petrak & H. Sydow (Etayo et al. 2007)
- \***pyxidatae** (Oudem.) Petrak & H. Sydow
- \***usneae** (Anzi) D. Hawksw.
- \***xanthoriae** M. S. Christ.

**LICHENODIPLIS** Dyko & D. Hawksw.

- \***dendrographae** Diederich & van den Boom (Diederich 2003)
- \***lecanorae** (Vouaux) Dyko & D. Hawksw.
- \***lecanoricola** (M. S. Cole & Hawksw.) Diederich Syn.: *Laeviomycetes lecanoricola* (Diederich 2003)
- \***lichenicola** Dyko & D. Hawksw.
- \***rinodinicola** Kocourk. & K. Knudsen (Knudsen & Kocourková 2009b)
- \***pertusariicola** (Nyl.) [Diederich Erroneously listed here \(Diederich 2003\)](#)

**LICHENOMPHALIA** Redhead, Lutzoni, Moncalvo & Vilgalys (Redhead et al. 2002)

- alpina** (Britzelm.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina alpina*, *O. luteovitellina*, *Phytoconis luteovitellina*, *Botrydina luteovitellina* (Redhead et al. 2002)
- hudsoniana** (H. S. Jenn.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina hudsoniana*, *Botrydina viridis*, *Coriscium viride*, *Phytoconis viridis* (Redhead et al. 2002)
- umbellifera** (L. : Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina umbellifera*, *O. ericetorum*, *Phytoconis ericetorum*, *Botrydina botryoides*, *B. vulgaris* (Redhead et al. 2002)
- velutina** (Quél.) Redhead, Lutzoni, Moncalvo & Vilgalys Syns.: *Omphalina velutina*, *Phytoconis velutina*, *Botrydina velutina* (Redhead et al. 2002)

**LICHENOPELTELLA** Höhn.

- \***arctomiae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009b)
- \***biatorae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009b)
- \***heterodermiicola** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2002)
- \***leprosulae** Pérez-Ortega & T. Sprib. (Pérez-Ortega & Spribille 2009b)
- \***peltigericola** (D. Hawksw.) R. Sant. (Alstrup & Cole 1998)
- \***santessonii** (P. M. Kirk & Spooner) R. Sant. (Alstrup & Cole 1998)
- \***stereocaulorum** Zhurb. (Zhurbenko 2010)
- \***thamnoliae** R. Sant. [Erroneously listed here; reported only from South America \(Diederich 2003\)](#)



**LICHENOPUCCINIA** D. Hawksw. & Hafellner  
\***poeltii** D. Hawksw. & Haffelner (Diederich 2003)

**LICHENOSTICTA** Zopf  
\***alcicornaria** (Lindsay) D. Hawksw.

**LICHENOSTIGMA** Hafellner  
\***alpinum** (R. Sant., Alstrup & D. Hawksw.) Ertz & Diederich Syn.: *Phaeosporobolus alpinus* (Ertz et al. 2014)  
\***ampla** Calat. & Hafellner (Kocourková & Knudsen 2008)  
\***anatolica** Halici & Kocakaya (Lendemer et al. 2009b)  
\***bolacinae** Nav.-Ros., Calat. & Hafellner (Kocourková & Knudsen 2008)  
\***chlaroterae** (F. Berger & Brackel) Ertz & Diederich (Ertz et al. 2014)  
\***cosmopolites** Hafellner & Calatayud (Hafellner & Calatayud 1999)  
\***dimelaenae** Calat. & Hafellner (Calatayud et al. 2004)  
\***elongata** Nav.-Ros. & Hafellner (Navarro-Rosines & Hafellner 1996)  
\***fellhanerae** (R. C. Harris & Lendemer) Ertz & Diederich Syn.: *Phaeosporobolus fellhanerae* (Ertz et al. 2014)  
\***maureri** Hafellner (Esslinger & Egan 1995) Syns: *Abrothallus usneae* auct. non Rabenh., *Phaeosporobolus usneae* (Ertz et al. 2014)  
\***radicans** Calatayud & Barreno (Knudsen & Kocourková 2008)  
\***rugosa** Thor  
\***saxicola** K. Knudsen & Kocourk. (Knudsen & Kocourková 2010d)  
\***semiimmersa** Hafellner (Hafellner 1999)  
\***subradicans** Hafellner, Calatayud & Nav.-Ros. (Calatayud et al. 2002)

**LICHENOTHELIA** D. Hawksw.  
#**arida** Muggia, Kocourk. & K. Knudsen (Muggia et al. 2015)  
#**calcareae** Henssen  
#**convexa** Henssen  
#**intermixta** Henssen  
#**metzleri** (J. Lahm) D. Hawksw. Syn.: *Microthelia metzleri*  
#**renobalesiana** D. Hawksw. & V. Atienza (Kocourková & Knudsen 2009d)  
#**scopularia** (Nyl.) D. Hawksw. Syns.: *Microthelia aterrima*, *Rinodina aterrima*  
#**tenuissima** Henssen  
#**umbrophila** Muggia, Kocourk. & K. Knudsen (Muggia et al. 2015)

**LICHENOTHRIX** Henssen = **PYRENOTHRIX**  
*riddlei* Henssen = *Pyrenothrix nigra*

**LICHINA** C. Agardh  
**confinis** (O. F. Müller) C. Agardh  
**willei** (Tuck.) Henssen

**LICHINELLA** Nyl.  
**americana** Henssen  
**cribellifera** (Nyl.) P. P. Moreno & Egea Syn.: *Gonohymenia cribellifera*, *Rechingeria cribellifera*  
**flexa** Henssen, Büdel & T. H. Nash (Schultz 2005)  
**granulosa** M. Schultz (Schultz 2005)  
**intermedia** Henssen (Schultz 2005)  
**iodopulchra** (Croz.) P. P. Moreno & Egea (Schultz 2005)  
**melamphylla** (Tuck.) Essl. Syns.: *Gonohymenia melamphylla*, *Pannaria melamphylla*  
**minnesotensis** (Fink) Essl. Syns.: *Forsellia minnesotensis*, *Gonohymenia minnesotensis*  
**myriospora** (Zahlbr.) P. P. Moreno & Egea (Schultz 2005)  
**nigritella** (Lettau) P. P. Moreno & Egea Syn.: *Gonohymenia nigritella*, *Thyrea nigritella*

**robustoides** Henssen, Büdel & T.H. Nash (Schultz 2005)  
**sinaica** (Marton & Galun) P. P. Moreno & Egea (Schultz 2005)  
**stipatula** Nyl.

**LICHINODIUM** Nyl.

**ahlneri** Henssen (Spribille et al. 2010)  
**canadense** Henssen  
**saxicola** Henssen  
**sirosiphoideum** Nyl.

**LIGNOSCRIPTA** B. D. Ryan

**atroalba** B. D. Ryan & T. H. Nash (Ryan 2004a)

**LITHOGRAPHIA** Nyl.

**tesserata** (DC.) Nyl.

**LITHOTHELIUM** Müll. Arg.

**hyalosporum** (Nyl.) Aptroot Syn.: Arthopyrenia hyalospora, Plagiocarpa hyalospora, Pleurotrema solivagum  
**illotum** (Nyl.) Aptroot Syn.: Plagiocarpa illota, P. langloisii  
**macrosporum** (R. C. Harris) Aptroot Syn.: Plagiocarpa macrospora  
**microsporum** R. C. Harris (Harris 1995a)  
**phaeosporum** (R. C. Harris) Aptroot Syn.: Plagiocarpa phaeosporum  
**septemseptatum** (R. C. Harris) Aptroot Syn.: Plagiocarpa septemseptata

**LLIMONAEA** Egea & Torrente

**californica** (Tuck.) Sparrius (Sparrius 2004b) = Schizopelte crustosa (Ertz & Tehler 2011)  
**cerebriformis** (Egea & Torrente) Sparrius (Sparrius 2004b) = Sparria cerebriformis (Ertz & Tehler 2011)

**LLIMONIELLA** Hafellner & Nav.-Ros.

\***acarosporicola** (Kocourk. & K. Knudsen) Diederich & Ertz Syn.: Gelatinopsis acarosporicola (Diederich et al. 2010)  
\***catapyrenii** Zhurb., Kukwa & Flakus (Zhurbenko 2013)  
\***cinnabarinae** Pérez-Ortega, Etayo & T. Sprib. (Pérez-Ortega et al. 2011)  
\***pertusariae** Diederich & Etayo (Diederich & Etayo 2000)  
\***phaeophysciae** Diederich, Ertz & Etayo (Diederich et al. 2010)  
\***pyrenulae** Diederich & Etayo (Diederich & Etayo 2000)  
\***neglecta** (Vainio) Triebel & Rambold = Rhymbocarpus neglectus

**LOBARIA** (Schreber) Hoffm.

**anomala** (Brodo & Ahti) T. Sprib. & McCune Syns.: Anomalobaria anomala, Pseudocyphellaria anomala (McCune et al. 2014b)  
**anthraspis** (Ach.) T. Sprib. & McCune Syns.: Anomalobaria anthraspis, Pseudocyphellaria anthraspis, Sticta anthraspis (McCune et al. 2014b)  
**amplissima** (Scop.) Forssell (Tønsberg & Goward 2001) Syn.: Sticta amplissima, S. glomulifera  
**hallii** (Tuck.) Zahlbr. Syn.: Sticta hallii  
**kurokawae** Yoshim.  
**linita** (Ach.) Rabenh. Syn.: Sticta linita  
**oregana** (Tuck.) Müll. Arg. Syn.: Sticta oregana  
**pseudopulmonaria** Gyelnik  
**pulmonaria** (L.) Hoffm. Syn.: Sticta pulmonaria  
**quercizans** Michaux Syn.: Sticta quercizans  
**ravenelii** (Tuck.) Yoshim. Syn.: Sticta erosa  
**retigera** (Bory) Trevisan  
**scrobiculata** (Scop.) DC. Syn.: Sticta verrucosa



**silvae-veteris** (Goward & Goffinet) Goward & Goffinet Syn.: *Nephroma silvae-veteris* (Goffinet & Goward 1998)

**tenuis** Vainio

*erosa* (Eschw.) Nyl. = *L. ravenelii*

*isidiosa* (Müll. Arg.) Vainio Not in North America.

*laetevirens* (Lightf.) Zahlbr. = *L. virens* (With.) J. R. Laundon, but not known from North America

*lobulifera* B. J. Moore = *L. tenuis*

*verrucosa* (Hudson) Hoffm. = *L. scrobiculata*

#### **LOBOTHALLIA** (Clauzade & Cl. Roux) Hafellner

**alphoplaca** (Wahlenb.) Hafellner Syn.: *Aspicilia alphoplaca*, *Lecanora alphoplaca*, *Lecanora thamnoplaca*

**melanaspis** (Ach.) Hafellner Syn.: *Aspicilia melanaspis*, *Lecanora melanaspis*

**praeradiosa** (Nyl.) Hafellner Syn.: *Aspicilia praeradiosa*, *Lecanora praeradiosa*

**radiosa** (Hoffm.) Hafellner Syn.: *Aspicilia radiosa*, *Lecanora radiosa*, *L. circinata*

#### **LOPADIOPSIS** Vainio = **GYALECTIDIUM**

*floridana* Zahlbr. = *Asterothyrium rotuliforme*

#### **LOPADIUM** Körber

**augustini** (Tuck.) Zahlbr.

**coralloideum** (Nyl.) Lynge

**disciforme** (Flotow) Kullhem

**dodgei** Herre

**pezizoideum** (Ach.) Körber

*alpinum* (Körber) R. Sant. = *Schadonia alpina*

*domingense* (Pers.) Fink = *Letrouitia domingensis*

*fecundum* Th. Fr. = *Schadonia fecunda*

*fuscum* Müll. Arg. = *Calopadia fusca*

*fuscoluteum* (Dickson) Mudd = *Brigantiaea fuscolutea*

*gemellum* (Anzi) Stizenb. = *Schadonia alpina*

*leucoxanthum* (Sprengel) Zahlbr. = *Brigantiaea leucoxantha*

*puiggarii* (Müll. Arg.) Zahlbr. = *Calopadia puiggarii*

*phyllocharis* (Mont.) Fink = *Tapellaria epiphylla*

*vulpinum* (Tuck.) Zahlbr. = *Letrouitia vulpina*

#### **LOPEZARIA** Kalb & Hafellner (Kalb 1990) = **MEGALARIA** Hafellner (Fryday & Lendemer 2010)

*versicolor* (Fée) Kalb & Hafellner (Kalb 1990) = *Megalaria versicolor*

#### **LOXOSPORA** A. Massal.

**assateaguensis** Lendemer (Lendemer 2013c)

**cismonica** (Beltr.) Hafellner Syn.: *Haematomma cismonicum*

**confusa** Lendemer (Lendemer 2013c)

**elatina** (Ach.) A. Massal. Syn.: *Haematomma elatinum*

**ochrophaea** (Tuck.) R. C. Harris Syn.: *Haematomma ochrophaeum*

*pustulata* (Brodo & W. L. Culb.) R. C. Harris = *Variolaria pustulata*

#### **LOXOSPOROPSIS** Henssen

**corallifera** Brodo, Henssen & Imshaug

#### **MACENTINA** Vězda

*dictyospora* Orange (Will-Wolf 1998) = *Psoroglaena dictyospora* (Harada 2003)

#### **MALCOLMIELLA** Vězda

*granifera* (Ach.) Kalb & Lücking (Lendemer & Knudsen 2007) = *Malmidea granifera*

**MALMIDEA** Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

**flavopustulosa** (M. Cáceres & Lücking) M. Cáceres & Kalb (Seavey & Seavey 2014a)

**furfurosa** (Tuck. ex Nyl.) Kalb & Lücking Syn.: *Lecidea furfurosa* (Lücking et al. 2011b)

**fuscella** (Müll. Arg.) Kalb & Lücking (Lücking et al. 2011b)

**granifera** (Ach.) Kalb, Rivas Plata & Lumbsch Syn.: *Lecanora granifera*, *Malcolmiella granifera* (Lücking et al. 2011b)

**gyalectoides** (Vainio) Kalb & Lücking (Lücking et al. 2011b)

**leptoloma** (Müll. Arg.) Kalb & Lücking (Lücking et al. 2011b)

**piperis** (Sprengel) Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

**rhodopis** (Tuck.) Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

**variabilis** Kalb (Lücking et al. 2011b)

**vinosa** (Eschw.) Kalb, Rivas Plata & Lumbsch (Lücking et al. 2011b)

**MARCHANDIOBASIDIUM** Diederich & Schultheis (Diederich & Lawrey 2007) = **ERYTHRICIUM**

\***aurantiacum** (Lasch) Diederich & Schultheis = *Erythrimum aurantiacum* (Hawksworth & Helcini 2015)

**MARCHANDIOMYCES** Diederich & D. Hawksw.

\***buckii** Diederich & Lawrey (Diederich & Lawrey 2007)

\***corallinus** (Roberge) Diederich & D. Hawksw. Syn.: *Illosporium corallinum*

#**lignicola** Lawrey & Diederich (DePriest et al. 2005)

**MARONEA** A. Massal.

**constans** (Nyl.) Hepp Questionable for N.Am. (Harris 2006b)

**polyphaea** H. Magn.

*carolinae* H. Magn. = *M. polyphaea* (Harris 2006b)

*porinoidea* Zahlbr. = *Ramonia valenzueliana*

**MASONHALEA** Kärnefelt

**inermis** (Nyl.) Lumbsch, M. Nelsen & A. Thell Syns.: *Cetraria inermis*, *Tuckermannopsis inermis* (Nelsen et al. 2013)

**richardsonii** (Hooker) Kärnefelt Syn.: *Cetraria richardsonii*

**MASSALONGIA** Körber

**carnosa** (Dickson) Körber

**microphylliza** (Nyl. ex Hasse) Henssen Syns.: *Placynthium dubium*, *P. microphyllizum*

**MASTODIA** Hooker f. & Harvey

**tessellata** (Hooker f. & Harvey) Hooker f. & Harvey Syns.: *Kohlmeyera complicatula*, *Turgidosculum complicatulum* (Kohlmeyer et al. 2004)

**MAZOSIA** A. Massal.

**ocellata** (Nyl.) R. C. Harris Syns.: *Platygrapha ocellata*, *Schismatomma ocellatum*, *Thelotrema carneum*, *Enterographa carnea*, *Ocellularia carnea*

*carnea* (Eckfeldt) Aptroot & M. Cáceres (Aptroot et al. 2014) = *M. ocellata* (Harris 1990)

**MEDUSULINA** Müll. Arg.

**nitida** (Eschw.) Müll. Arg. Syn.: *Graphis nitida*

**texana** Müll. Arg.

**MEGALARIA** Hafellner

**albocincta** (Degel.) Tønsberg (Ekman & Tønsberg 1996) Syns.: *Catillaria albocincta*, *Catillochroma albocinctum* (Fryday & Lendemer 2010)

**allenae** Lendemer & McMullin (McMullin & Lendemer 2016)

**beechingii** Lendemer (Lendemer 2007b)

**brodoana** S. Ekman & Tønsberg (Ekman & Tønsberg 1996)



**columbiana** (G. Merr.) S. Ekman (Ekman & Tønsberg 1996) *Catillaria columbiana*  
**grossa** (Pers. ex Nyl.) Hafellner Syns.: *Catillaria grossa*, *Catinaria grossa*, *C. leucoplaca* auct.  
**jemtlandica** (Th. Fr. & Almq.) Fryday Syn.: *Catillaria jemtlandica*, *Lecidea sublimosa* (Fryday 2004a)  
**laureri** (Hepp ex Th. Fr.) Hafellner (Ekman & Tønsberg 1996) Syns.: *Catillaria laureri*, *Catinaria laureri*  
**leptocheila** (Tuck.) Fryday & Lendemer Syns.: *Catillaria leptocheila*, *Catillochroma leptocheilum* (Fryday & Lendemer 2010)  
**pannosa** (Zahlbr.) Fryday & Lendemer (Fryday & Lendemer 2010)  
**pulverea** (Borrer) Hafellner & E. Schreiner Syn.: *Catillaria pulverea*  
**versicolor** (Flotow) Fryday & Lendemer Syn.: *Catillochroma versicolor* (Fryday & Lendemer 2010)

#### MEGALOSPORA Meyen

**pachycheila** (Tuck.) Sipman Syn.: *Bombyliospora pachycheila*, *Heterothecium pachycheilum*  
**porphyritis** (Tuck.) R. C. Harris Syn.: *Bombyliospora porphyritis*  
**tuberculosa** (Fée) Sipman Syn.: *Bombyliospora tuberculosa*, *Heterothecium tuberculosum sanguinaria* (L.) A. Massal. = *Mycoblastus sanguinaria*  
**versicolor** (Fée) Zahlbr. = *Megalaria versicolor*

#### MEGASPORA (Clauz. & Cl. Roux) Hafellner & V. Wirth

**verrucosa** (Ach.) Hafellner & V. Wirth Syns.: *Pachyospora verrucosa*, *P. mutabilis*, *Lecanora verrucosa*, *L. mutabilis* (Ach.) Nyl. non Sommerf., *L. urceolaria*, *Pertusaria freyi*

#### MELANARIA Erichsen = PERTUSARIA

**macounii** I. M. Lamb = *Pertusaria macounii*

#### MELANELIA Essl.

**agnata** (Nyl.) A. Thell Syn.: *Cetraria agnata*  
**culbersonii** (Hale) A. Thell Syn.: *Cetraria culbersonii*  
**hepatizon** (Ach.) A. Thell Syn.: *Cetraria hepatizon*, *C. polyschiza*  
**stygia** (L.) Essl. Syn.: *Parmelia stygia*  
**albertana** (Ahti) Essl. = *Melanelixia albertana*  
**commixta** (Nyl.) A. Thell = *Cetrariella commixta*  
**disjuncta** (Erichsen) Essl. = *Montanelia disjuncta*  
**elegantula** (Zahlbr.) Essl. = *Melanohalea elegantula*  
**exasperata** (De Not.) Essl. = *Melanohalea exasperata*  
**exasperatula** (Nyl.) Essl. = *Melanohalea exasperatula*  
**fuliginosa** (Fr. ex Duby) Essl. = *Melanelixia fuliginosa*, but apparently absent from North America  
**glabra** (Schaerer) Essl. North American reports are *Melanelixia californica*  
**glabratula** (Lamy) Essl. = *Melanelixia glabratula*  
**glabroides** (Essl.) Essl. = *Melanelixia glabroides*  
**granulosa** (Lynge) Essl. = *Montanelia disjuncta*  
**halei** (Ahti) Essl. = *Melanohalea halei*  
**incolorata** (Parrique) Essl. = *Melanohalea elegantula*  
**infumata** (Nyl.) Essl. = *Melanohalea infumata*  
**multispora** (A. Schneider) Essl. = *Melanohalea multispora*  
**olivacea** (L.) Essl. = *Melanohalea olivacea*  
**olivaceoides** (Krog) Essl. = *Melanohalea olivaceoides*  
**panniformis** (Nyl.) Essl. = *Montanelia panniformis*  
**septentrionalis** (Lynge) Essl. = *Melanohalea septentrionalis*  
**sorediata** (Ach.) Goward & Ahti = *Montanelia sorediata*  
**sorediosa** (Almb.) Essl. = *Montanelia sorediata*  
**subargentifera** (Nyl.) Essl. = *Melanelixia subargentifera*  
**subaurifera** (Nyl.) Essl. = *Melanelixia subaurifera*  
**subelegantula** (Essl.) Essl. = *Melanohalea subelegantula*  
**subolivacea** (Nyl.) Essl. = *Melanohalea subolivacea*  
**substygia** (Räsänen) Essl. = *Montanelia tominii*, but North American reports are *M. saximontana* or *M.*

[secwepemc](#)

tominii (Oxner) Essl. = Montanelia tominii, [but North American reports are M. saximontana or M. secwepemc](#)

trabeculata (Ahti) Essl. = Melanohalea trabeculata

villosella (Essl.) Essl. (Esslinger 2002c) = Melanelixia villosella

**MELANELIXIA** O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch (Blanco et al. 2004a)

[ahtii](#) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

**albertana** (Ahti) O. Blanco et al. Syns.: Melanelia albertana, Parmelia albertana

**californica** A. Crespo & Divakar (Divakar et al. 2010)

**glabratula** (Lamy) Sandler & Arup Syns.: Melanelia glabratula, Parmelia glabratula

**glabroides** (Essl.) O. Blanco et al. Syns.: Melanelia glabroides, Parmelia glabroides

[robertsoniorum](#) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

**subargentifera** (Nyl.) O. Blanco et al. Syns.: Melanelia subargentifera, Parmelia subargentifera, P. conspurcata

**subaurifera** (Nyl.) O. Blanco et al. Syns.: Melanelia subaurifera, Parmelia subaurifera

**villosella** (Essl.) O. Blanco et al. Syns.: Melanelia villosella, Parmelia villosella

fuliginosa (Fr. ex Duby) O. Blanco et al. North American reports are misidentifications of M. glabratula (Leavitt et al. 2012)

glabra (Schaerer) O. Blanco et al. North American reports are M. californica

**MELANOGRAPHIA** Müll. Arg. (Ertz & Diederich 2015)

\***tribulodes** (Tuck.) Müll. Arg. Syn.: Melaspilea tribulodes, Opegrapha tribulodes (Ertz & Diederich 2015)

**MELANOHALEA** O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch (Blanco et al. 2004a)

[beringiana](#) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

[clari](#) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

[columbiana](#) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

**elegantula** (Zahlbr.) O. Blanco et al. Syns.: Melanelia elegantula, M. incolorata, Parmelia elegantula

**exasperata** (De Not.) O. Blanco et al. Syns.: Melanelia exasperata, Parmelia exasperata, P. aspera, P. aspidota

**exasperatula** (Nyl.) O. Blanco et al. Syns.: Melanelia exasperatula, Parmelia exasperatula

**halei** (Ahti) O. Blanco et al. Syns.: Melanelia halei, Parmelia halei

**infumata** (Nyl.) O. Blanco et al. Syns.: Melanelia infumata, Parmelia infumata

**multispora** (A. Schneider) O. Blanco et al. Syns.: Melanelia multispora, Parmelia multispora

**olivacea** (L.) O. Blanco et al. Syns.: Melanelia olivacea, Parmelia olivacea

**olivaceoides** (Krog) O. Blanco et al. Syns.: Melanelia olivaceoides, Parmelia olivaceoides

**septentrionalis** (Lynge) O. Blanco et al. Syns.: Melanelia septentrionalis, Parmelia septentrionalis

**subelegantula** (Essl.) O. Blanco et al. Syns.: Melanelia subelegantula, Parmelia subelegantula

**subolivacea** (Nyl.) O. Blanco et al. Syns.: Melanelia subolivacea, Parmelia subolivacea

[tahltan](#) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)

**trabeculata** (Ahti) O. Blanco et al. Syns.: Melanelia trabeculata, Parmelia trabeculata

**MELANOLECIA** Hertel

**transitoria** (Arnold) Hertel ex Poelt

jurana (Schaerer) Hertel = Farnoldia jurana

micropsis (A. Massal.) Hertel = Farnoldia micropsis

**MELANOMMA** Nitschke ex Fuckel

<sup>+</sup>**oxysporum** (Zahlbr.) D. Hawksw. Syn.: Microthelia oxyspora

**MELANOPHLOEA** P. James & Vězda

americana K. Knudsen & Lendemer (Knudsen et al. 2011b) = Trimmatothelopsis americana (Knudsen & Lendemer 2016) Syn.: Thelenella americana (Knudsen & Kocouroková 2013)



**MELANOTHECA** Körber = PYRENULA

- achariana Fée = Pyrenula anomala
- aggregata (Fée) Müll. Arg. = not in North America
- anomala (Ach.) A. Massal. = Pyrenula anomala
- cinerata Zahlbr. = Pyrenula sexlocularis
- concatervans (Nyl.) Zahlbr. = Pyrenula sexlocularis
- cruenta (Mont.) Müll. Arg. = Pyrenula cruenta
- esenbeckiana Fée = Tomasellia esenbeckiana, but a misidentification for North America
- subincruenta (Nyl.) Zahlbr. = Pyrenula cruenta
- wrightii Müll. Arg. = misidentification for North American records

**MELANOTOPELIA** Lumbsch & Mangold (Mangold et al. 2008)

- toensbergii** (Vězda & Kantvilas) Lumbsch & Mangold Syn.: Topeliopsis toensbergii (Mangold et al. 2008)

**MELANOTREMA** A. Frisch (Frisch 2006)

- meiospermum** (Nyl.) A. Frisch Syn.: Ocellularia meiosperma, Phaeotrema meiospermum (Frisch 2006)
- platystomum** (Mont.) Frisch (Seavey & Seavey 2014a)

**MELASPILEA** Nyl.

- amota** Nyl.
- cinerascens** (Willey) Fink Syn.: Opegrapha cinerascens
- constrictella** (Stirton) A. L. Sm.
- \***cupularis** Müll. Arg.
- demissa** (Tuck.) Zahlbr. Syn.: Opegrapha demissa
- \***epigena** Müll. Arg. (Esslinger & Egan 1995)
- gemella** (Eschw.) Nyl. (Esslinger & Tucker 2009)
- interjecta** (Leighton) A. L. Sm. (Villella et al. 2013)
- maculosa** (Fr.) Müll. Arg.
- stellans** Zahlbr.
- urceolata** (Fr.) Ertz & Diederich (Ertz & Diederich 2015)
- arthonioides (Fée) Nyl. = M. urceolata (Ertz & Diederich 2015)
- deformis** (Schaerer) Nyl. = [Hazslinszkya gibberulosa](#), but misidentifications for North America (Perlmutter et al. 2015)
- difformis (Rabenh.) Nyl. = Hazslinszkya gibberulosa (Ertz & Diederich 2015)
- gibberulosa (Ach.) Zwackh (Brodo 1967) = Hazslinszkya gibberulosa (Ertz & Diederich 2015)
- lentiginosula** (Nyl.) A. L. Sm. = [misidentification for North America](#) (Perlmutter et al. 2015)
- mesophlebia** (Nyl.) Müll. Arg. = [Opegrapha mesophlebia](#) (Perlmutter et al. 2015)
- octomera** Müll. Arg. = [Opegrapha astraea](#) (Perlmutter et al. 2015)
- <sup>+</sup>**proximella** (Nyl.) Nyl. = Melaspileella proximella (Ertz & Diederich 2015)
- \***tribulodes** (Tuck.) Müll. Arg. = Melanographa tribulodes (Ertz & Diederich 2015)

**MELASPILEELLA** (P. Karsten) Vainio (Ertz & Diederich 2015)

- <sup>+</sup>**proximella** (Nyl.) Ertz & Diederich Syn.: Melaspilea proximella

**MENEGAZZIA** A. Massal.

- subsimilis** (H. Magn.) R. Sant. (Bjerke 2003)
- terebrata** (Hoffm.) A. Massal. Syn.: Parmelia pertusa, P. sipeana
- pertusa (Schrank) Stein = M. terebrata

**MERISMATIUM** Zopf

- \***coccisporum** (Norman) Vouaux
- \***decolorans** (Rehm ex Arnold) Triebel
- \***heterophractum** (Nyl.) Vouaux (Zhurbenko & Laursen 2003)
- \***nigritellum** (Nyl.) Vouaux (Zhurbenko & Dillman 2010)
- \***peregrinum** (Flotow) Triebel (Harris & Lendemer 2005)

**METAMELANEA** Henssen

**melambola** (Tuck.) Henssen Syn.: *Pyrenopsis melambola*, *Synalissa melambola*  
**umbonata** Henssen (Fryday 2006)

**METASPHAERIA** Sacc.

\***tartarina** (Nyl.) Keissler (Talbot et al. 2000) = *Sagediopsis campsteriana*

**MICAREA** Fr.

**alabastrites** (Nyl.) Coppins (Tønsberg & Coppins 2000)  
**anterior** Coppins (McCune et al. 2014b)  
**assimilata** (Nyl.) Coppins Syn.: *Lecidea assimilata*  
**botryoides** (Nyl.) Coppins (McCune 1996)  
**byssacea** (Th. Fr.) Czarnota, Guzow-Krzemińska & Coppins (Launis & Myllys 2014)  
**chlorosticta** (Tuck.) R. C. Harris Syn.: *Bacidia chlorosticta*  
**cinerea** (Schaerer) Hedl.  
**coppinsii** Tønsberg (Fryday 2006)  
**deminuta** Coppins (Fryday & Coppins 2007)  
**denigrata** (Fr.) Hedl. Syn.: *Lecidea aniptiza*  
**elachista** (Körber) Coppins & R. Sant.  
**endocyanea** (Tuck. ex Willey) R. C. Harris Syn.: *Bacidia endocyanea*  
**globulosella** (Nyl.) Coppins  
**hedlundii** Coppins  
**incrassata** Hedl.  
**leprosula** (Th. Fr.) Coppins & A. Fletcher  
**lignaria** (Ach.) Hedl. Syn.: *Bacidia lignaria*  
**lithinella** (Nyl.) Hedl.  
**marginata** Coppins & Muhr (Fryday 2006)  
**melaena** (Nyl.) Hedl. Syn.: *Bacidia melaena*, *Bilimbia melaena*  
**micrococca** (Körber) Gams ex Coppins (Fryday & Coppins 2007)  
**misella** (Nyl.) Hedl. Syn.: *Lecidea misella*  
**myriocarpa** V. Wirth & Vězda ex Coppins (Tønsberg 1999a)  
**neostipitata** Coppins & P. May (Coppins & May 2001)  
**nitschkeana** (J. Lahm ex Rabenh.) Harm.  
**paratropa** (Nyl.) Alstrup (Alstrup et al. 1994)  
**pelioarpa** (Anzi) Coppins & R. Sant. Syn.: *Bacidia trisepta*, *Bilimbia trisepta*  
**perparvula** (Nyl.) Coppins & Printzen (Printzen 1995, Coppins 2008)  
**prasina** Fr. Syn.: *Catillaria prasina*  
**prasinella** (Jatta) I. M. Lamb (Spribille et al. 2010)  
**pycnidiophora** Coppins & P. James  
**rhabdogena** (Norman) Hedl. Syn.: *Lecidea punctella* (Printzen 1995)  
**subalpina** Coppins & T. Sprib. (Coppins & Spribille 2004)  
**synotheoides** (Nyl.) Coppins (Tønsberg & Coppins 2000)  
**ternaria** (Nyl.) Vězda Syn.: *Lecidea suballinita*  
**turfosa** (A. Massal.) Du Rietz  
**vulpinaris** (Nyl.) Muhr  
**xanthonica** Coppins & Tønsberg (Coppins & Tønsberg 2001)  
*bauschiana* (Körber) V. Wirth & Vězda = *Brianaria bauschiana* (Ekman & Svensson 2014)  
*clavopycnidiata* Brodo & Tønsberg = *Szczawinskia tsugae* (Aptroot et al. 1997)  
*crassipes* (Th. Fr.) Coppins = *Helocarpon crassipes*  
*erratica* (Körber) Hertel, Rambold & Pietschmann = *Leimonis erratica*  
*gelatinosa* (Flörke) Brodo = *Trapeliopsis gelatinosa*  
*globularis* "(Ach. ex Nyl.) Hedl." = *M. misella*  
*lutulata* (Nyl.) Coppins = *Brianaria lutulata* (Ekman & Svensson 2014)  
*lynceola* (Th. Fr.) Palice = misidentification for North America? (Coppins & Fryday 2006b)  
*melanobola* (Nyl.) Coppins = misidentification for North America (Coppins & Fryday 2006b)



populina (Müll. Arg. ex Nyl.) R. A. Anderson & M. P. Carmer = Lecidea populina  
[subviolascens \(H. Magn.\) Coppins](#) = [Micarea paratropa \(Alstrup et al. 1994\)](#)  
sylvicola (Flotow) Vězda & V. Wirth = Brianaria sylvicola (Ekman & Svensson 2014)  
trisepta (Hellbom) Wetmore = M. peliocarpa  
tuberculata (Sommerf.) R. A. Anderson = Brianaria tuberculata (Ekman & Svensson 2014)  
violacea (Crouan ex Nyl.) Hedl. = M. peliocarpa  
viridescens (Schrader) Brodo = Trapeliopsis viridescens

**MICAREOPSIS** R. C. Harris & Lendemer (Lendemer et al. 2013)  
**irriguata** R. C. Harris & Lendemer

**MICROCALICIUM** Vainio

<sup>+</sup>**ahlneri** Tibell  
<sup>#</sup>**arenarium** (Hampe ex A. Massal.) Tibell Syn.: Coniocybopsis arenaria  
<sup>\*</sup>**conversum** Tibell (Tibell & Ryan 2004)  
<sup>\*</sup>**disseminatum** (Ach.) Vainio Syns.: Mycocalicium disseminatum, Calicium disseminatum  
<sup>\*</sup>subpedicellatum (Schaerer) Tibell = M. disseminatum

**MICROGLAENA** Körber nom. illegit. = **THELENELLA**

corrosa (Körber) Arnold = Protothelenella corrosa  
hassei Zahlbr. = Thelenella hassei  
inductula (Nyl.) Servít = Thelenella inductula  
muscorum (Fr.) Th. Fr. = Thelenella muscorum  
sordidula Th. Fr. = Thelenella sordidula  
sphinctrinoides (Nyl.) Lönnr. = Protothelenella sphinctrinoides  
subcorallina Hasse = Thelenella modesta  
sychnogonoides Zahlbr. = Thelenella hassei

**MICROLYCHNUS** A. Funk

epicorticis A. Funk = Gyalideopsis epicorticis

**MICROPHIALE** (Stizenb.) Zahlbr. = **COENOGONIUM**

diluta (Pers.) Zahlbr. (Fink 1935) = Coenogonium pineti  
lutea (Dickson) Zahlbr. (Fink 1935) = Coenogonium luteum

**MICROTHELIA** Körber = **ANISOMERIDUM**

<sup>#</sup>aterrima (Kremp. ex Anzi) Zahlbr. = Lichenothelia scopularia  
hymnothora (Ach.) Trevisan = Granulopyrenis hymnothora  
<sup>#</sup>inops Degel. = Kirschsteiniothelia aethiops  
<sup>#</sup>metzleri J. Lahm = Lichenothelia metzleri  
<sup>#</sup>micula auct. non Flotow ex Körber = Kirschsteiniothelia aethiops for most North American records  
<sup>+</sup>oblongata Müll. Arg. = Mycomicrothelia wallrothii  
<sup>+</sup>oxyspora Zahlbr. = Melanomma oxysporum  
<sup>+</sup>thelena (Ach.) Trevisan = Mycomicrothelia thelena, but not found in North America  
verruculosa Anastasiou = identity uncertain  
<sup>+</sup>wallrothii (Hepp) Rehm = Mycomicrothelia wallrothii  
<sup>#</sup>willeyana Müll. Arg. = Mycomicrothelia willeyana

**MINUTOEXCIPULA** V. Atienza & D. Hawksw.

<sup>\*</sup>**mariana** V. Atienza (Diederich 2003)  
<sup>\*</sup>**tuckerae** V. Atienza & D. Hawksw.

**MIRIQUIDICA** Hertel & Rambold (Hertel & Rambold 1987)

**atrofulva** (Sommerf.) A. J. Schwab & Rambold Syn.: Lecidea atrofulva  
**deusta** (Stenh.) Hertel & Rambold Syn.: Lecidea deustata  
**garovaglioi** (Schaerer) Hertel & Rambold Syns.: Lecidea garovaglioi, L. aenea

**griseoatra** (Flotow) Hertel & Rambold Syn.: (?) *Lecidea subplumbea*  
**instrata** (Nyl.) Hertel & Rambold Syn.: *Lecidea instrata*  
**intrudens** (H. Magn.) Hertel & Rambold Syn.: *Lecanora intrudens*  
**leucophaea** (Flörke ex Rabenh.) Hertel & Rambold Syn.: *Lecidea leucophaea*, *L. marylandensis*  
**leucophaeoides** (Nyl.) Hertel & Andreev Syn.: *Lecidea leucophaeoides* (Hertel & Andreev 2003)  
**lulensis** (Hellbom) Hertel & Rambold Syn.: *Lecidea lulensis*, *L. circumnigrata* var. *reagens*  
**nigroleprosa** (Vainio) Hertel & Rambold (Spribille et al. 2010)  
**plumbeoatra** (Vainio) A. J. Schwab & Rambold Syn.: *Lecidea plumbeoatra*, *L. furva*, *L. humilis*  
**pulvinatula** (Arnold) Hertel & Rambold Syn.: *Lecidea circumnigrata*  
**pyncocarpa** (Körber) Andreev Syn.: *Lecidea marciensis*, *L. pyncocarpa* (Coppins & Fryday 2006b)  
**scotopholis** (Tuck.) B. D. Ryan & Timdal Syn.: *Lecanora scotopholis*, *Lecidea scotopholis*, *Psora scotopholis*, *Psorula scotopholis* (Nash et al. 2004a)  
**#verrucariicola** (B. D. Ryan) K. Knudsen & Kocourk. Syn.: *Lecanora verrucariicola*, *Protoparmelia ryaniana* (Knudsen et al. 2015)  
*mexicana* Rambold, Sipman & Hertel (Knudsen & Owe-Larson 2005) = *M. scotopholis* (Knudsen et al. 2008b, Lendemer & Knudsen 2008, Knudsen et al. 2015)

#### **MOBERGIA** H. Mayrhofer & Sheard

**angelica** (Stizenb.) H. Mayrhofer & Sheard Syn.: *Rinodina angelica*, *R. bolodes*, *R. dirinoides*, *Dimelaena angelica*  
**calculiformis** (W. A. Weber) H. Mayrhofer & Sheard Syn.: *Rinodina calculiformis*, *R. platyloba*

#### **MOELLEROPSIS** Gyelnik

**nebulosa** (Hoffm.) Gyelnik subsp. **nebulosa** (Jørgensen 2002)  
**nebulosa** (Hoffm.) Gyelnik subsp. **frullaniae** Maass (Jørgensen 2000a, Maass 1986)

#### **MONOBLASTIA** Riddle

**borinquensis** R. C. Harris (Harris 1995a)  
**buckii** R. C. Harris  
**cypressi** R. C. Harris (Harris 1995a)  
**rappii** Zahlbr.

#### **MONOBLASTIOPSIS** R. C. Harris & C. A. Morse

**konzana** R. C. Harris & C. A. Morse (Harris & Morse 2008)  
**nigrocortina** R. C. Harris & C. A. Morse (Harris & Morse 2008)

#### **MONODICTYS** S. Hughes

\***cellulosa** S. Hughes (Diederich 2003)  
 \***fuliginosa** Etayo (Zhurbenko 2009b)

#### **MONTANELIA** Divakar, A. Crespo, Wedin & Essl. (Divakar et al. 2012)

**disjuncta** (Erichsen) Divakar, A. Crespo, Wedin & Essl. Syn.: *Melanelia disjuncta*, *Parmelia disjuncta*, *P. granulosa*, *P. denalii*  
**ocultipanniformis** S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)  
**panniformis** (Nyl.) Divakar, A. Crespo, Wedin & Essl. Syn.: *Melanelia panniformis*, *Parmelia panniformis*  
**saximontana** (R. Anderson & W. Weber) S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016) Syn.: *Parmelia saximontana*, *P. substygia* p.p.  
**secwepemc** S. Leavitt, Essl., Divakar, A. Crespo & Lumbsch (Leavitt et al. 2016)  
**sorediata** (Ach.) Divakar, A. Crespo, Wedin & Essl. Syn.: *Melanelia sorediata*, *M. sorediosa*, *Parmelia sorediata*, *P. sorediosa*  
**tominii** (Oxner) Divakar, A. Crespo, Wedin & Essl. North American reports are *M. saximontana* or *M. secwepemc* Syn.: *Melanelia tominii*, *Parmelia saximontana*, *P. substygia*

#### **MOSIGIA** Fr. ex A. Massal. = **RIMULARIA**

**gibbosa** (Ach.) Fr. ex A. Massal. = *Rimularia gibbosa*



## **MUELLERELLA** Hepp ex Müll. Arg.

- \***erratica** (A. Massal.) Hafellner & V. John Syn.: *M. pygmaea* v. *athallina* (Knudsen & Kocourková 2009b)
- \***hospitans** Stizenb. (Spribille et al. 2010)
- \***lecanactidis** Diederich & van den Boom (Diederich 2003)
- \***lichenicola** (Sommerf. ex Fr.) D. Hawksw.
- \***pygmaea** (Körber) D. Hawksw. Syn.: *Tichothecium pygmaeum*
- \***ventosicola** (Mudd) D. Hawksw.
- \**pygmaea* var. *athallina* (Müll. Arg.) Triebel = \**M. erratica*
- \**pygmaea* var. *ventosicola* (Mudd) Triebel = \**M. ventosicola*

## **MULTICLAVULA** R. Petersen

- coronilla** (G. W. Martin) R. Petersen
- corynoides** (Peck) R. Petersen
- mucida** (Fr.) R. Petersen
- sharpii** R. Petersen
- vernalis** (Schwein.) R. Petersen

## **MYCOBILIMBIA** Rehm

- berengeriana** (A. Massal.) Hafellner & V. Wirth Syn.: *Lecidea berengeriana*
- carneoalbida** (Müll. Arg.) S. Ekman & Printzen (Ekman 2004c) Syns.: *Bacidia carneoalbida*, *B. sphaeroides*, *Biatora carneoalbida*, *Bilimbia sphaeroides* auct.
- epixanthoides** (Nyl.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen (Hafellner & Türk 2001) Syns: *Biatora epixanthoides*, *Lecidea epixanthoides*
- fissuriseda** (Poelt) Poelt & Hafellner Syn.: *Lecidea fissuriseda*
- pilularis** (Körber) Hafellner & Türk Syns.: *Bacidia sphaeroides*, *Biatora sphaeroides*, *Bilimbia sphaeroides*, *Catillaria sphaeroides* (Hafellner & Türk 2001)
- tetramera** (De Not.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen ex Hafellner & Türk (Hafellner & Türk 2001) Syn.: *Bacidia fusca*  
*accedens* (Arnold) V. Wirth ex Hafellner = *Bilimbia accedens*  
*austrocalifornica* (Zahlbr.) Knudsen (Knudsen 2005b) = *Carbonea latypizodes*  
*fusca* (A. Massal.) Hafellner & V. Wirth = *M. tetramera*  
*hypnorum* (Lib.) Kalb & Hafellner = *Bryobilimbia hypnorum*  
*lobulata* (Sommerf.) Hafellner = *Bilimbia lobulata*  
*lurida* (Ach.) Hafellner & Türk (Hafellner & Türk 2001) = *Romjularia lurida*  
*microcarpa* (Th. Fr.) W. Brunnbauer = *Bilimbia microcarpa*  
*obscurata* (Sommerf.) Rehm = *M. tetramera*  
*sabuletorum* (Schreber) Hafellner = *Bilimbia sabuletorum*

## **MYCOBLASTUS** Norman

- affinis** (Schaerer) T. Schauer
- alpinus** (Fr.) Kernst.
- caesius** (Coppins & P. James) Tønsberg Syn.: *Haematomma caesium*
- glabrescens** (Nyl.) Zahlbr. (Kantvilas 2009)
- sanguinarioides** Kantvilas (Spribille et al. 2011b)
- sanguinarius** (L.) Norman Syn.: *Megalospora sanguinaria*  
*fucatus* (Stirton) Zahlbr. = *Violella fucata* (Spribille et al. 2011a)
- marginatus* Degel. = *M. affinis* (Spribille & Tønsberg 2007)
- melinus* (Kremp. ex Nyl.) Hellbom = *M. affinis*
- tornoënsis* (Nyl.) R. A. Anderson = *Japewia tornoënsis*

## **MYCOCALICIUM** Vainio

- +**albonigrum** (Nyl.) Fink Syn.: *Calicium albonigrum*
- +**americanum** (R. Sant.) Tibell
- +**calicioides** (Nádv.) Tibell Syn.: *Sphinctrinella calicioides*

**fuscipes** (Tuck.) Fink Syn.: *Calicium fuscipes*  
**ravenelii** (Tuck.) Fink Syn.: *Calicium ravenelii*  
**reticulatum** Nád. v.  
<sup>+</sup>**sequoiae** Bonar  
<sup>+</sup>**subtile** (Pers.) Szatala Syn.: *M. parietinum*, *Calicium subtile*  
**victoriae** (C. Knight & F. Wilson) Nád. v. (Nash et al. 1998; Tibell 2007)  
<sup>+</sup>**compressulum** Nyl. ex Szatala = *Phaeocalicium compressulum*  
<sup>\*</sup>**disseminatum** (Ach.) Fink = *Microcalicium disseminatum*  
<sup>\*</sup>**microcephalum** (Sm.) Fink = *Sphinctrina anglica*  
<sup>+</sup>**parietinum** (Ach. ex Schaerer) D. Hawksw. = *M. subtile*  
<sup>#</sup>**pusiolum** (Ach.) Räsänen = *Chaenothecopsis pusiola*  
<sup>+</sup>**rappii** Nád. v. = *Chaenothecopsis rappii* (Harris 1995a)  
<sup>+</sup>**savonicum** Räsänen = *Chaenothecopsis savonica*

#### MYCOGLAENA Höhnelt

<sup>+</sup>**acuminans** (Nyl.) Vainio  
<sup>+</sup>**alni** (Dearness & House) Barr  
<sup>+</sup>**canadensis** (Ellis & Everh.) Barr  
<sup>+</sup>**elegans** (Berk. & Curtis) Höhnelt  
<sup>+</sup>**meridionalis** (Zahlbr.) Szatala  
<sup>+</sup>**myricae** (Nyl.) R. C. Harris  
<sup>+</sup>**quercicola** R. C. Harris  
<sup>+</sup>**subcoerulescens** (Nyl.) Höhnelt

#### MYCOMICROTHELIA Keissler

<sup>#</sup>**captiosa** (Kremp.) D. Hawksw.  
<sup>+</sup>**dothideaspora** (Cook & Harkn.) D. Hawksw.  
<sup>#</sup>**hemisphaerica** (Müll. Arg.) D. Hawksw.  
<sup>+</sup>**inaequalis** (Fabre) D. Hawksw.  
<sup>#</sup>**subfallens** (Müll. Arg.) D. Hawksw.  
<sup>+</sup>**wallrothii** (Hepp) D. Hawksw. Syn.: *Microthelia wallrothii*, *M. oblongata*  
<sup>#</sup>**willeyana** (Müll. Arg.) D. Hawksw. Syn.: *Microthelia willeyana*  
*thelena* (Ach.) D. Hawksw. Syn.: *Microthelia thelena*, but not found in North America

#### MYCOPORELLUM Müll. Arg.

*californicum* Zahlbr. = *Mycoporum californicum* (Harris 1995a)  
*difforme* (Minks) Fink = *Mycoporum lacteum* (Harris 1995a)  
*hassei* Zahlbr. = *Mycoporum lacteum* (Harris 1995a)  
*sparsellum* (Nyl.) Müll. Arg. = *Mycoporum sparsellum* (Harris 1995a)

#### MYCOPORUM Flotow ex Nyl.

**acervatum** R. C. Harris (Harris 1995a)  
**antecellens** (Nyl.) R. C. Harris Syn.: *Arthopyrenia antecellens* (Harris 1995a)  
**biseptatum** [Lendemer & R. C. Harris](#) Syn.: *Arthonia biseptata* (Lendemer & Harris 2014c, [Lendemer & Harris 2015a](#))  
**buckii** R. C. Harris (Harris 1995a)  
**californicum** (Zahlbr.) R. C. Harris (Harris 1995a) Syn.: *Tomasellia californica*, *Mycoporellum californicum*  
**compositum** (A. Massal.) R. C. Harris Syn.: *Dermatina "pyrenocarpa"*  
**eschweileri** (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: *Tomasellia eschweileri*  
<sup>+</sup>**hippocastani** (DC) Coppins (Aptroot 2002c)  
**lacteum** (Ach.) R. C. Harris (Harris 1995a) Syn.: *Mycoporellum difforme*, *M. hassei*, *Tomasellia lactaea*  
**mycoporoides** (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: *Arthopyrenia mycoporoides*  
**pyncocarpoides** Müll. Arg.  
**sparsellum** Nyl. (Harris 1995a) Syn.: *Tomasellia sparsella*, *Mycoporellum sparsellum*



**uniloculatum** R. C. Harris (Harris 1995a)  
ohiense Nyl. ex Fink = *M. compositum*  
pyncocarpum Nyl. = *M. compositum*

**MYELOCHROA** (Asahina) Elix & Hale

**aurulenta** (Tuck.) Elix & Hale Syns.: *Parmelina aurulenta*, *Parmelia aurulenta*, *P. silvestris*  
**galbina** (Ach.) Elix & Hale Syns.: *Parmelina galbina*, *Parmelia galbina*, *P. subquercifolia*, *P. sulphurosa*  
**metarevoluta** (Asahina) Elix & Hale Syns.: *Parmelina metarevoluta*, *Parmelia metarevoluta*  
**obsessa** (Ach.) Elix & Hale Syns.: *Parmelina obsessa*, *Parmelia obsessa*, *P. finkii*

**MYOCHROIDEA** Printzen, T. Sprib. & Tønsberg (Printzen et al. 2008)

**leprosula** (Arnold) Printzen, T. Sprib. & Tønsberg  
**minutula** Printzen, T. Sprib. & Tønsberg  
**porphyrospoda** (Anzi) Printzen, T. Sprib. & Tønsberg Syns.: *Biatora porphyrospoda*, *Lecidea porphyrospoda*  
**rufofusca** (Anzi) Printzen, T. Sprib. & Tønsberg Syn. : *Biatora rufofusca*, *Lecidea rufofusca*

**MYRIOLECIS** Clements

**agardhiana** (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora agardhiana* (Zhao et al. 2016)  
**albescens** (Hoffm.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora albescens*, *L. galactina* (Zhao et al. 2016)  
**andrewii** (B. de Lesd.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora andrewii* (Zhao et al. 2016)  
**carlottiana** (Lewis & Šliwa) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora carlottiana* (Zhao et al. 2016)  
**contractula** (Nyl.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora contractula* (Zhao et al. 2016)  
**crenulata** (Hooker) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora crenulata* (Zhao et al. 2016)  
**dispersa** (Pers.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora dispersa* (Zhao et al. 2016)  
**flowersiana** (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora flowersiana* (Zhao et al. 2016)  
**fugiens** (Nyl.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora fugiens* (Zhao et al. 2016)  
**hagenii** (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora hagenii* (Zhao et al. 2016)  
**invadens** (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora invadens* (Zhao et al. 2016)  
**juniperina** (Šliwa) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora juniperina* (Zhao et al. 2016)  
**percrenata** (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora percrenata* (Zhao et al. 2016)  
**perpruinosa** (Frøberg) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora perpruinosa* (Zhao et al. 2016)  
**persimilis** (Th. Fr.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora persimilis* (Zhao et al. 2016)  
**salina** (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora salina* (Zhao et al. 2016)  
**schofieldii** (Brodo) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora schofieldii* (Zhao et al. 2016)  
**semipallida** (H. Magn.) Šliwa, Zhao Xin & Lumbsch Syns.: *Lecanora flotoviana*, *L. semipallida* (Zhao et al. 2016)  
**straminea** (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora straminea* (Zhao et al. 2016)  
**torrida** (Vainio) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora torrida* (Zhao et al. 2016)  
**wetmorei** (Šliwa) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora wetmorei* (Zhao et al. 2016)  
**zosteræ** (Ach.) Šliwa, Zhao Xin & Lumbsch Syn.: *Lecanora zosteræ* (Zhao et al. 2016)

**MYRIONORA** R. C. Harris

**albidula** (Willey) R. C. Harris Syn.: *Biatorella albidula*

**MYRIOSPORA** Nägeli ex Uloth (Arcadia & Knudsen 2012)

**hassei** (Herre) K. Knudsen & L. Arcadia Syns.: *Acarospora hassei*, *A. particularis*, *Silobia hassei* (Arcadia & Knudsen 2012)  
**rhagadiza** (Nyl.) K. Knudsen & L. Arcadia Syns.: *Acarospora amphibola* auct., *Silobia rhagadiza* (Arcadia & Knudsen 2012)  
**scabrida** (Hedl. ex Magn.) K. Knudsen & L. Arcadia Syns.: *Acarospora scabrida*, *Silobia scabrida* (Arcadia & Knudsen 2012)  
**smaragdula** (Wahlenb. ex Ach.) K. Knudsen & L. Arcadia Syns.: *Acarospora amphibola*, *A. smaragdula*, *A. smaragdula* var. *lesdainii*, *Silobia smaragdula* (Arcadia & Knudsen 2012)

heppii (Nägeli ex Körber) Hue = *Caeruleum heppii*  
immersa (Fink ex J. Hedrick) R. C. Harris = *Caeruleum immersum*

#### MYRIOTREMA Fée

**erodens** R. C. Harris  
**glauculum** (Nyl.) Hale  
**laeviusculum** (Nyl.) Hale Syn.: *Leptotrema laeviusculum*  
**microporum** (Mont.) Hale Syn.: *Ocellularia micropora*  
**peninsulae** R. C. Harris  
**pyncoporellum** (Nyl.) Hale (Lücking et al. 2011b)  
**reclusum** (Kremp.) Hale Syn.: *Leptotrema reclusum*  
**rugiferum** (Harm.) Hale  
**terebratulum** (Nyl.) Hale Syn.: *Ocellularia terebratula*  
bahianum (Ach.) Hale North American reports are *Ocellularia obturascens* (Lücking et al. 2011)  
clandestinum (Fée) Hale Not present in North America  
compunctum (Ach.) Hale = *Leucodecton occultum*  
glaucescens (Nyl.) Hale = *Leucodecton glaucescens*  
glaucophaenum (Kremp.) Hale = *Glaucotrema glaucophaenum*  
granulosum (Leighton) Hale Erroneously reported for North America  
halei (Tuck.) Hale = *Thelotrema halei*  
subcompunctum (Nyl.) Hale = *Leucodecton subcompunctum*  
wightii (Taylor) Hale = [Sanguinotrema wightii](#)

#### MYXOBILIMBIA Hafellner = BILIMBIA (Veldkamp 2004)

accedens (Arnold) Hafellner = *Bilimbium accedens*  
sabuletorum (Schreber) Hafellner = *Bilimbium sabuletorum*

#### MYXOPHORA Döbbeler & Poelt

<sup>+</sup>**leptogiophila** (Minks ex G. Winter) Nik. Hoffm. & Hafellner (Hoffmann & Hafellner 2000)

#### MYXOTRICHUM Kunze

\***bicolor** (Ehrenb. ex Pers.) Fr.  
poluninii Apinis = *M. bicolor*

#### NADVORNIKIA Tibell

**hawaiiensis** (Tuck.) Tibell  
**sorediata** R. C. Harris

#### NAETROCYNBE Körber

#**atomarioides** (Müll. Arg.) R. C. Harris (Harris 1995a)  
#**atractospora** (Zahlbr.) R. C. Harris (Harris 1995a)  
#**cedrina** (Zahlbr.) R. C. Harris (Harris 1995a)  
#**fraxini** (Massal.) R. C. Harris (Harris 1995a)  
**herrei** K. Knudsen & Lendemer (Knudsen & Lendemer 2009b)  
#**megalospora** (Lönnr.) R. C. Harris (Harris 1995a)  
#**punctiformis** (Pers.) R. C. Harris (Harris 1995a)  
#**quassiicola** (Fée) R. C. Harris (Harris 1995a)  
**saxicola** (A. Massal.) R. C. Harris (Lendemer et al. 2010)  
[#massalongiana \(Hepp\) R. C. Harris A European species, listed here erroneously \(Harris 1995a\)](#)

#### NANOSTICTIS M. S. Christ.

\***christiansenii** Etayo (Alstrup & Cole 1998)  
\***pseudocyphellariae** Sherwood

#### NECTRIA (Fr.) Fr.

<sup>+</sup>**zonata** Seaver



- \*lecanodes Ces. (Esslinger & Egan 1995) = Nectriopsis lecanodes
- \*parmeliae (Berk. & M. A. Curtis) D. Hawksw. = Ovicuculispora parmeliae
- \*rubefaciens Ellis & Everh. = Nectriopsis rubefaciens

#### NECTRIELLA Nitschke ex Fuckel

- \*anisospora Lowen = Pronectria anisospora

#### NECTRIOPSIS Maire

- \***cladoniicola** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- \***lecanodes** (Ces.) Diederich & Schroers Syn. Nectria lecanodes (Sérusiaux et al. 1999)
- \***rubefaciens** (Ellis & Everh.) M. S. Cole & D. Hawksw. Syn.: Nectria rubefaciens (Cole & Hawksworth 2001)
- \*parmeliae (Berk. & M. A. Curtis) M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001) = Ovicuculispora parmeliae

#### NEOBARYA Lowen

- \***peltigerae** Lowen, Boqueras & Gomez-Bolea (Zhurbenko 2009c)

#### NEOCATAPYRENIUM Harada

- disparatum** Breuss (Breuss 2005)

#### NEOCOLEROA Petrak

- \***inundata** (Vainio) Diederich (Harris & Lendemer 2009) Reported as uncertain

#### NEOFUSCELIA Essl. = XANTHOPARMELIA (Blanco et al. 2004b; but, see McCune et al 2014b)

- ahtii (Essl.) Essl. = Xanthoparmelia ahtii
- atticoides (Essl.) Essl. = Xanthoparmelia atticoides
- brunella (Essl.) Essl. = Xanthoparmelia brunella
- chiricahuensis (R. A. Anderson & W. A. Weber) Essl. = Xanthoparmelia chiricahuensis
- infrapallida (Essl.) Essl. = Xanthoparmelia infrapallida
- loxodes (Nyl.) Essl. = Xanthoparmelia loxodes
- occidentalis (Essl.) Essl. = Xanthoparmelia occidentalis
- pulla (Ach.) Essl. = Xanthoparmelia pulla, but not present in North America
- pustulosa (Essl.) Essl. = Xanthoparmelia pustulosa
- subhosseana (Essl.) Essl. = Xanthoparmelia subhosseana
- verruculifera (Nyl.) Essl. = Xanthoparmelia verruculifera

#### NEOLAMYA Theissen & Sydow

- \***peltigerae** (Mont.) Theissen & Sydow (Alstrup & Cole 1998)
- \***xanthoparmeliae** Kocourk. (Kocourková 2009)

#### NEPHROMA Ach.

- arcticum** (L.) Torss.
- bellum** (Sprengel) Tuck.
- expallidum** (Nyl.) Nyl.
- helveticum** Ach. subsp. **helveticum** Syn.: Nephromium helveticum
- helveticum** subsp. **sipeanum** (Gyelnik) Goward & Ahti
- isidiosum** (Nyl.) Gyelnik
- laevigatum** Ach.
- occultum** Wetmore
- parile** (Ach.) Ach.
- resupinatum** (L.) Ach. Syn.: Sticta drummondii
- aspera Tuck. = N. helveticum subsp. helveticum
- canadense Räsänen = N. helveticum subsp. sipeanum
- filarszkyanum Gyelnik = N. bellum
- helveticum Ach. var. sipeanum (Gyelnik) Wetmore = N. helveticum subsp. sipeanum

laevigatum auct. non Ach. = *N. bellum*  
 lusitanicum Schaerer = *N. laevigatum* Ach. non auct.  
 massachusettsianum Gyelnik = *N. helveticum* subsp. *helveticum*  
 plittii Gyelnik = *N. helveticum* subsp. *helveticum*  
 rameum (Schaerer) A. Massal. (Fink 1935) = *N. resupinatum* (L.) Ach. (Wetmore 1960)  
 silvae-veteris Goward & Goffinet = *Lobaria silvae-veteris*  
 sipeanum Gyelnik = *N. helveticum* subsp. *sipeanum*  
 szatalae Gyelnik = *N. laevigatum*  
 subtomentellum (Nyl.) Gyelnik = *N. bellum*  
 washingtoniense Gyelnik = *N. laevigatum*

#### NEPHROMIUM Nyl. = NEPHROMA

*helveticum* (Ach.) Nyl. = *Nephroma helveticum*  
*tropicum* (Müll. Arg.) Zahlbr. (Gyelnik 1932) = *Nephroma helveticum* subsp. *helveticum*

#### NEPHROMOPSIS Müll. Arg.

*californica* Gyelnik = *Tuckermannopsis orbata* (Tucker 2013)  
*ciliaris* (Ach.) Hue = *Tuckermannopsis ciliaris*  
*platyphylla* (Tuck.) Herre = *Tuckermannopsis platyphylla*

#### NESOLECHIA A. Massal.

*cladoniscum* (Willey) Fink = apothecia of *Pycnothelia papillaria*  
*\*oxyspora* (Tul.) A. Massal. = *Phacopsis oxyspora*  
*\*oxysporella* (Nyl.) Arnold (Fink 1935) Identity uncertain (Esslinger & Tucker 2009)  
*papillariae* (Willey) Fink (Fink 1935) = apothecia of *Pycnothelia papillaria* (Rambold & Triebel 1992)  
*\*thallicola* (A. Massal.) A. Massal. = *Phacopsis thallicola*  
*vitellinaria* (Nyl.) Rehm (Fink 1935) = *Carbonea vitellinaria* (Scholz 2000)

#### NEUROPOGON Nees & Flotow = USNEA

*lambii* Imshaug = *Usnea lambii*  
*sulphureus* (J. König) Hellbom = *Usnea sphacelata*  
*sphacelatus* (R. Br.) Alstrup & E. S. Hansen = *Usnea sphacelata*

#### NIEBLA Rundel & Bowler

**cedrosensis** J. E. Marsh & T. H. Nash Syns.: *Vermilacinia cedrosensis*, *V. reptiloderma* (Bowler & Marsh 2004)  
**cephalota** (Tuck.) Rundel & Bowler Syns.: *Desmazieria cephalota*, *Ramalina cephalota*, *Vermilacinia cephalota* (Bowler & Marsh 2004)  
**ceruchis** Rundel & Bowler Syns.: *Desmazieria ceruchis*, *Ramalina ceruchis*, *Vermilacinia cerebra*, *V. corrugata*, *V. ceruchis*, *V. howei*, *V. leoni*, *V. leopardina*, *V. nylanderi*, *V. vesiculosa*, *V. zebrina* (Bowler & Marsh 2004)  
**ceruchoides** Rundel & Bowler Syns.: *Desmazieria ceruchoides*, *Vermilacinia ceruchoides*, *V. acicularis*, *V. pumila* (Bowler & Marsh 2004)  
**combeoides** (Nyl.) Rundel & Bowler Syns.: *Desmazieria combeoides*, *Ramalina combeoides*, *Vermilacinia combeoides* (Bowler & Marsh 2004)  
**homalea** (Ach.) Rundel & Bowler Syns.: *Desmazieria homalea*, *D. testudinaria*, *Ramalina homalea*, *R. testudinaria*  
**isidiascens** Bowler, J. E. Marsh, T. H. Nash & Riefner  
**laevigata** Bowler & Rundel Syns.: *Vermilacinia johncassadyi*, *V. laevigata*, *V. ligulata*, *V. paleoderma*, *V. rigida*, *V. rosei*, *V. varicosa* (Bowler & Marsh 2004)  
**polymorpha** Bowler, J. E. Marsh, T. H. Nash, & Riefner Syn.: *Vermilacinia polymorpha* (Bowler & Marsh 2004)  
**procera** Rundel & Bowler Syn.: *Vermilacinia procera* (Bowler & Marsh 2004)  
**ramosissima** Spjut ([Spjut 1996](#), [Knudsen & Wheeler 2015](#))  
**robusta** (R. Howe) Rundel Syns.: *Ramalina combeoides* var. *robusta*, *Vermilacinia robusta* (Bowler & Marsh 2004)



**tuberculata** Riefner, Bowler, J. E. Marsh & T. H. Nash Syn: Vermilacinia tuberculata (Bowler & Marsh 2004)

caespitosa Spjut (Spjut 1996) = N. homalea

cornea Spjut (Spjut 1996) = N. homalea

dactylifera Spjut (Spjut 1996) = N. homalea

disrupta (Nyl.) Spjut (Spjut 1996) = N. homalea

dissecta Spjut (Spjut 1996) = N. homalea

eburnea Spjut (Spjut 1996) = N. homalea

fimbriata Spjut (Spjut 1996) = N. homalea

flaccescens (Nyl.) Rundel & Bowler = a South American species, not in North America

flagelliforma Spjut (Spjut 1996) = N. homalea

halei Spjut (Spjut 1996) = N. homalea

infundibula Spjut (Spjut 1996) = N. homalea

laminaria Spjut (Spjut 1996) = N. homalea

palmeri Spjut (Spjut 1996) = N. homalea

siphonoloba Spjut (Spjut 1996) = N. homalea

sorediata Spjut (Spjut 1996) = N. homalea

sorocarpia Spjut (Spjut 1996) = N. homalea

testudinaria (Nyl.) Spjut (Spjut 1996) = N. homalea

undulata Spjut (Spjut 1996) = N. homalea

#### **NISSLIA** Auersw.

\***cladoniicola** D. Hawksw. & W. Gams (Hansen & Alstrup 1995)

\***lobariae** Etayo & Diederich (Zhurbenko & Dillman 2010)

\***peltigericola** (D. Hawksw.) Etayo (Zhurbenko 2010)

#### **NIGROPUNCTA** D. Hawksw.

\***rugulosa** D. Hawksw. (Alstrup & Cole 1998)

#### **NODOBRYORIA** Common & Brodo

**abbreviata** (Müll. Arg.) Common & Brodo Syns.: Bryoria abbreviata, Alectoria abbreviata

**oregana** (Tuck.) Common & Brodo Syns.: Bryoria oregana, Alectoria oregana

**subdivergens** (E. Dahl) Common & Brodo Syns.: Bryoria subdivergens, Alectoria subdivergens

#### **NORMANDINA** Nyl.

**pulchella** (Borrer) Nyl. Syn.: Lauderlindsaya borreri (Muggia et al. 2010)

#### **OBRYZUM** Wallr.

\***corniculatum** Wallr. (Diederich 2007b)

#### **OCELLULARIA** G. Meyer

**americana** Hale

**auberianoides** (Nyl.) Müll. Arg. (Lücking et al. 2011b)

**cavata** (Ach.) Müll. Arg.

**concolor** Meyen & Flotow (Harris 1995a)

**fissa** (Nyl.) Hale

**obturascens** (Nyl.) Hale (Lücking et al. 2011b) Syn.: Thelotrema bahianum var. obturascens

**postposita** (Nyl.) A. Frisch (Frisch 2006)

**praestans** (Müll. Arg.) Hale Syn.: Thelotrema praestans

**retispora** R. C. Harris

**sanfordiana** (Zahlbr.) Hale Syn.: Thelotrema sanfordianum Possible synonym of Ocellularia interposita (Frisch 2006)

alborosella (Nyl.) R. Sant. = Chapsa alborosella

auberiana (Mont.) Hale = Stegobolus auberianus

bahiana (Ach.) A. Frisch North American reports are O. obturascens (Lücking et al. 2011)

carnea (Eckfeldt) Zahlbr. = Mazosia ocellata

domingensis (Fée) Müll. Arg. = misidentification for North America  
 emersa (Kremp.) Müll. Arg. (Harris 1995a) = *Rhabdodiscus emersus*  
 floridensis Fink = *Thelotrema porinoides*  
 glaucophaena (Kremp.) Zahlbr. = *Glaucotrema glaucophaenum*  
 granulosa (Tuck.) Zahlbr. = *Rhabdodiscus granulosus*  
 interposita (Nyl.) Hale = misidentification for North America  
 lathraea (Tuck.) Zahlbr. = *Thelotrema lathraeum*  
 leiostoma (Tuck.) R. C. Harris = *Redingeria leiostoma* (Tuck.) A. Frisch, but not in North America (Frisch & Kalb 2006)  
 meiosperma (Nyl.) Hale = *Melanotrema meiospermum*  
 micropora (Mont.) Müll. Arg. = *Myriotrema microporum*  
 stictidea (Nyl.) Vězda = *Trinathotrema stictideum*  
 subtilis (Tuck.) Riddle = *Thelotrema subtile*  
 terebratula (Nyl.) Müll. Arg. = *Myriotrema terebratulum*

# **OCHROLECHIA** A. Massal.

**africana** Vainio  
**alaskana** (Versegghy) Kukwa (Kukwa 2009b)  
**androgyna** (Hoffm.) Arnold  
**antillarum** Brodo  
**arborea** (Kreyer) Almb.  
**bryophaga** (Erichsen) K. Schmitz & Lumbsch Syn.: *Pertusaria bryophaga*  
**farinacea** Howard  
**frigida** (Sw.) Lynge  
**gowardii** Brodo  
**grimmiae** Lynge  
**gyalectina** (Nyl.) Zahlbr.  
**inaequatula** (Nyl.) Zahlbr.  
**isidiata** (Malme) Versegghy (Lendemer & Harris 2014b)  
**juvenalis** Brodo  
**laevigata** (Räsänen) Versegghy ex Kukwa (Kukwa 2011)  
**mahluensis** Räsänen (Brodo & Lendemer 2012; Knudsen 2012)  
**mexicana** Vainio  
**microstictoides** Räsänen (Brodo & Lendemer 2012)  
**montana** Brodo  
**oregonensis** H. Magn.  
**pseudopallescens** Brodo  
**rhodoleuca** (Th. Fr.) Brodo Syn.: *Pertusaria rhodoleuca*  
**splendens** Lumbsch & Messuti (Roemer et al. 2004)  
**subathallina** H. Magn.  
**subisidiata** Brodo  
**subpallescens** Versegghy  
**subplicans** (Nyl.) Brodo subsp. **subplicans** Syn.: *Pertusaria subplicans*  
**subplicans** subsp. **hultenii** (Erichsen) Brodo Syn.: *Pertusaria hultenii*  
**szatalaënsis** Versegghy  
**tartarea** (L.) A. Massal.  
 [*Pertusaria trachydactyla* Vainio]  
**trochophora** (Vainio) Oshio var. **trochophora**  
**trochophora** var. **pruinerosella** Brodo  
**turneri** (Sm.) Hasselrot (Brodo & Lendemer 2012)  
**upsaliensis** (L.) A. Massal.  
**xanthostoma** (Sommerf.) K. Schmitz & Lumbsch Syn.: *Pertusaria xanthostoma*  
**yasudae** Vainio  
 alboflavescens (Wulfen) Zahlbr. = a European taxon, not in North America  
 apiculata Versegghy Mistakenly reported for North America  
 californica Versegghy = *O. oregonensis*



elisabethae-kolae Verseghe = *O. frigid*  
 frigida f. alaskana Verseghe = *O. alaskana*  
 geminipara (Th. Fr.) Vainio = *Pertusaria geminipara*  
 gonatodes (Ach.) Räsänen = *O. frigida*  
 groenlandica Verseghe = *O. frigida* (Kukwa 2009a)  
 pacifica H. Magn. = *Coccotrema pocillarium*  
 pallescens (L.) A. Massal. Not in North America  
 parella (L.) A. Massal. Not in North America  
 pennsylvanica Verseghe = *O. yasudae*  
 pseudotartarea (Vainio) Verseghe = *O. pallescens*  
 pterulina (Nyl.) Howard = *O. frigida*  
 rhamni-purshianae E. Senft Identity uncertain  
 rosella (Müll. Arg.) Verseghe = *O. trochophora*  
 soresiosa Howard = *O. szatalaensis*  
 subviridis (Høeg) Erichsen Not in North America  
 tuckermanii Verseghe = *O. yasudae*

#### ODONTOTREMA Nyl. (Baloch et al. 2013b)

\*bryoriae Diederich & Etayo (Diederich et al. 2002) = *Sphaeropezia intermedia*  
 \*intermedium Diederich, Zhurb. & Etayo (Diederich et al. 2002) = *Sphaeropezia intermedia*  
 \*lecanorae Diederich & G. Marson (Diederich et al. 2002) = *Sphaeropezia lecanorae*  
 \*melaneliae Diederich & Zhurb. (Diederich et al. 2002) = *Sphaeropezia melaneliae*  
 \*ochrolechiae Diederich, Holien & Zhurb. (Diederich et al. 2002) = *Sphaeropezia ochrolechiae*  
 \*santessonii Zhurb., Etayo & Diederich (Zhurbenko 2012) = *Sphaeropezia santessonii*  
 \*sipei (Grümmann) Diederich (Diederich et al. 2002) = *Sphaeropezia sipei*  
 \*thamnoliae Zhurb., Diederich & Etayo (Zhurbenko 2012) = *Sphaeropezia thamnoliae*

#### OMPHALARIA Girard & Dunal ex Nyl. = THYREA

girardii Durieu & Mont. = *Thyrea girardii*  
 kansana Tuck. = *Peccania kansana*  
 pulvinata (Schaerer) Nyl. (Claassen 1912) North American reports are *Thyrea confusa*  
 symphorea (Ach.) Tuck. = *Synalissa ramulosa*  
 umbella Tuck. = *Lempholemma umbella*

#### OMPHALINA Quélet

alpina (Britzelm.) Bresinsky & Stangl = *Lichenomphalia alpina*  
 ericetorum (Pers. : Fr.) M. T. Lange = *Lichenomphalia umbellifera*  
 hudsoniana (H. S. Jenn.) H. E. Bigelow = *Lichenomphalia hudsoniana*  
 luteovitellina (Pilát & Nannf.) M. T. Lange = *Lichenomphalia alpina*  
 \*peltigerina (Peck) P. Collin = *Arrhenia peltigerina*  
 umbellifera (L. : Fr.) Quélet = *Lichenomphalia umbellifera*  
 velutina (Quélet) Quélet = *Lichenomphalia velutina*

#### OMPHALODISCUS Schol. = UMBILICARIA

crustulosus (Ach.) Schol. = *Umbilicaria crustulosa*  
 decussatus (Vill.) Schol. = *Umbilicaria decussata*  
 krascheninnikovii (Savicz) Schol. = *Umbilicaria krascheninnikovii*, but N.A. reports are *U. polaris*  
 virginis (Schaerer) Schol. = *Umbilicaria virginis*

#### OMPHALODIUM Meyen & Flotow

arizonicum (Tuck.) Tuck. = *Omphalora arizonica*

#### OMPHALORA T. H. Nash & Hafellner

**arizonica** (Tuck.) T. H. Nash & Hafellner Syns.: *Lecanora arizonica*, *Omphalodium arizonicum*, *Parmelia arizonica*

## OPEGRAPHA Ach.

- \***agelaea** Fée (Ertz 2009)
- \***anomea** Nyl. (Ertz et al. 2004)
- astraea** Tuck. [Syn.: Melaspilea octomera](#)
- aurantiaca** B. de Lesd. (Harris 1995a)
- bonplandii** Fée
- \***buelliae** Zhurb. (Zhurbenko 2013)
- candida** Müll. Arg.
- corticola** Coppins & P. James (Tønsberg 2002)
- \***diffracticola** R. C. Harris & Ladd (Harris & Ladd 2005, 2007)
- dolomitica** (Arnold) Clauzade & Cl. Roux ex Torrente & Egea (Lendemer et al. 2009b)
- erosa** Egea & Ertz (Ertz & Egea 2007))
- \***foreaui** (Moreau) Hafellner & R. Sant. (Diederich 2003)
- fumosa** Coppins & P. James (Tønsberg 1997 [1998])
- \***geographicola** (Arnold) Hafellner (Dillman et al. 2012)
- gyrophorica** F. Seavey & J. Seavey (Seavey et al. 2014)
- \***hellespontica** Vondrák & Kocourk. (Kocourková & Knudsen 2009d)
- herbarum** Mont.
- keyensis** F. Seavey & J. Seavey (Seavey et al. 2014)
- \***lamyi** (O. J. Rich. ex Nyl.) Triebel [Syn.: Leciographa lamyi](#)
- leucoplaca** Müll. Arg.
- levidensis** Willey (Fink 1935, Esslinger & Tucker 2009)
- lithyrga** Ach.
- \***melanospila** Müll. Arg. (Diederich 2003)
- [mesophlebia](#) Nyl. [Syn.: Melaspilea mesophlebia](#) (Perlmutter et al. 2015)
- microcycla** Tuck.
- moroiana** Lendemer (Lendemer 2009)
- niveoatra** (Borrer) J. R. Laundon
- \***phaeophysciae** R. Sant., Diederich, Ertz & Christnach (Hafellner 2009)
- prosodea** Ach.
- protocetrarica** F. Seavey & J. Seavey (Seavey et al. 2014)
- protuberans** Zahlbr.
- \***pulvinata** Rehm [Syn.: Opegraphoidea pulvinata](#)
- ravenelii** (Tuck.) Tehler [Syns.: Lecanactis ravenelii, Platygrapha ravenelii, Schismatomma ravenelii](#)
- \***rupestris** Pers. [Syn.: Leciographa parasitica](#)
- sorediifera** P. James
- \***sphaerophoricola** Isbrand & Alstrup
- \***stereocaulicola** Alstrup & D. Hawksw. (Zhurbenko 2010)
- \***thelotrematis** Coppins (Tønsberg 1997 [1998])
- umbellulariae** Zahlbr.
- vulgata** Ach.
- xerica** Torrente & Egea (Ertz & Egea 2007)
- atra** Pers. = *Arthonia atra* (Ertz et al. 2009)
- betulina** Sm. = *O. herbarum*
- bicolor** R. C. Harris & Lendemer (Harris & Lendemer 2005) = *Alyxoria bicolor* (Ertz & Tehler 2011)
- brattiae** Egea & Ertz (Ertz & Egea 2007) = *Lecanographa brattiae* (Ertz & Tehler 2011)
- calcareo** Turner ex Sm. & Sowerby = *Arthonia calcarea* (Ertz et al. 2009)
- cinerea** Chevall. = *O. vulgata*
- cypressi** R. C. Harris = *Vigneronia cypressi* (Ertz et al. 2015b)
- demissa** Tuck = *Melaspilea demissa*
- diaphora** (Ach.) Ach. = *Alyxoria varia*
- diaphoroides** Nyl. = *Lecanographa grumulosa*
- [filicina](#) Mont. = [Fouragea filicina](#) (Frisch et al. 2014)
- \***glaucomaria** (Nyl.) Källsten ex Hafellner = *\*Phacographa glaucomaria*
- gyrocarpa** Flotow = *Gyrographa gyrocarpa* (Ertz et al. 2015b)
- hassei** Zahlbr. = *Lecanographa hypothallina*



herpetica (Ach.) Ach. = *O. rufescens*  
 herpetica var. subocellata Ach. (Fink 1935) = *O. rufescens* (Santesson et al. 2004)  
 hypothallina (Zahlbr.) Tehler = *Lecanographa hypothallina*  
 lichenoides Pers. = *Alyxoria varia*  
 longissima Müll. Arg. = *Dimidiographa longissima* (Ertz & Tehler 2011)  
 mesophlaebia Nyl. (Fink 1935) Orthographic variant of *O. mesophlebia* Nyl. = *Melaspilea mesophlebia*  
*mougeotii* A. Massal. (Harris & Ladd 2005) = *Alyxoria mougeotii*  
 ochrocheila Nyl. = *Alyxoria ochrocheila* (Ertz & Tehler 2011)  
 oulocheila Tuck. = *Dermiscellum oulocheila*  
 \*physciaria (Nyl.) D. Hawksw. & Coppins (Cole & Hawksworth 2001) = *Phacothecium varium* (Hafellner 2009)  
 prosiliens Stirton = *O. protuberans*  
 pulicaris auct. = *Alyxoria varia*  
 \*quaternella Nyl. = *O. anomea* (Ertz et al. 2004)  
 rimalis Pers. ex Ach. = *Alyxoria varia*  
 rufescens Pers. = *Pseudoschismatomma rufescens* (Ertz et al. 2015b)  
 \*saxicola Ach. = *O. rupestris*  
 scaphella var. gemella (Eschw.) Eckfeldt (Fink 1935) = *Melaspilea gemella*  
 \*trassii S. Y. Kondr. & Coppins (Coppins & Kondratyuk 1998) = *O. foreaui*  
 \*tribulodes Tuck. (Mohr 1901) = *Melanographa tribulodes*  
 varia Pers. = *Alyxoria varia* (Ertz & Tehler 2011)  
 viridis (Pers. ex Ach.) Behlen & Desberger = *Zwackhia viridis* (Ertz & Tehler 2011)  
 \*wetmorei M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001) = *O. anomea* (Ertz et al. 2004)  
 zonata Körber (Sparrius 2004b) = *Enterographa zonata* (Ertz et al. 2009)

#### **OPEGRAPHOIDEA** Fink

\**staurothelicola* Fink (fide D. Ertz)  
 \*pulvinata (Rehm) Fink = *Opegrapha pulvinata*  
 \*quaternella (Nyl.) Fink = *Opegrapha anomea*

#### **OPHIOPARMA** Norman

*lapponica* (Räsänen) Hafellner & R. W. Rogers  
*rubricosa* (Müll. Arg.) S. Ekman Syns.: *Bacidia rubricosa*, *B. herrei*, *Haematomma californicum*  
*ventosa* (L.) Norman (May 1997)  
*herrei* (Zahlbr.) Kalb & Staiger (Staiger & Kalb 1995) = *O. rubricosa* (Ekman 1996)

#### **ORCULARIA** (Malme) Kalb & Giralt (Kalb & Giralt 2011)

*insperata* (Nyl.) Kalb & Giralt Syn.: *Amandinea insperata* (Kalb & Giralt 2011)  
*placodiomorpha* (Vainio) Kalb & Giralt Syn.: *Amandinea placodiomorpha*, *Buellia placodiomorpha* (Kalb & Giralt 2011)

#### **ORPHNIOSPORA** Körber

*moriopsis* (A. Massal.) D. Hawksw. Syns.: *Buellia atrata*, *B. moriopsis*, *B. coracina*  
*atrata* (Sm.) Poelt = *O. moriopsis*

#### **OVICUCULISPORA** Etayo (Etayo 2010)

\**parmeliae* (Berk. & M. A. Curtis) Etayo (Etayo 2010) Syns.: *Nectria parmeliae*, *Nectriopsis parmeliae*

#### **OXNERIA** S. Y. Kondr. & Kärnefelt (Kondratyuk & Kärnefelt 2003a, 2003b) = **XANTHOMENDOZA** (Lindblom 2006)

*weberi* S. Y. Kondr. & Kärnefelt = *Xanthomendoza weberi* (Lindblom 2006)

#### **PACHYOSPORA** A. Massal.

*mutabilis* (Ach.) A. Massal. = *Megaspora verrucosa*  
*verrucosa* (Ach.) A. Massal. = *Megaspora verrucosa*

**PACHYPELTIS** Søchting, Arup & Frödén (Arup et al. 2013)

**cladodes** (Tuck.) Søchting, Frödén & Arup Syn.: *Caloplaca cladodes*, *Placodium cladodes*

**invadens** (Lynge) Søchting, Frödén & Arup Syn.: *Caloplaca invadens*

**PACHYPHIALE** Lönnr. = **GYALECTA** (Baloch et al. 2013a)

**carneola** (Ach.) Arnold = *Gyalecta carneola*

**fagicola** (Arnold) Zwackh = *Gyalecta fagicola*

**gyalizella** (Nyl.) S. Ekman = *Gyalecta gyalizella*

**PACHYPHYSIS** R. C. Harris & Ladd (Harris & Ladd 2005, 2007)

**ozarkana** R. C. Harris & Ladd (Harris & Ladd 2005, 2007)

**PALICELLA** Rodr. Flakus & Printzen (Rodriguez Flakus & Printzen 2014)

**filamentosa** (Stirton) Rodr. Flakus & Printzen Syn.: *Lecanora filamentosa*

**schizochromatica** (Pérez-Ortega, T. Sprib. & Printzen) Rodr. Flakus & Printzen Syn.: *Lecanora schizochromatica*

**PANNARIA** Delise

**conoplea** (Ach.) Bory

**elator** Stirton (Jørgensen 2000c)

**hookeri** (Borrer ex Sm.) Nyl.

**lurida** (Mont.) Nyl. subsp. **lurida** Syn.: *Physma luridum*

**lurida** subsp. **quercicola** P. M. Jørg. (Jørgensen 2000c)

**lurida** subsp. **russellii** (Tuck.) P. M. Jørg. (Jørgensen 2000c)

**rubiginella** P. M. Jørg. & Sipman (Jørgensen 2005)

**rubiginosa** (Thunb.) Delise

**subfusca** P. M. Jørg. (Jørgensen 2000c)

**tavaresii** P. M. Jørg.

**ahlneri** P. M. Jørg. = *Fuscopannaria ahlneri*

**crossophylla** Tuck. = *Santessoniella crossophylla*

**cyanolepra** Tuck. = *Fuscopannaria cyanolepra*

**granatina** (Sommerf.) Th. Fr. = *Euopsis granatina*

**halei** Tuck. = *Phyllopsora halei*

**hypnorum** (Vahl) Körber = *Psoroma hypnorum*

**isidiata** Degel. = *Vestergrenopsis isidiata*

**laceratula** Hue = *Fuscopannaria laceratula*

**lepidiota** (Sommerf.) Th. Fr. = *Fuscopannaria praetermissa*

**leucophaea** (Vahl) P. M. Jørg. = *Vahliella leucophaea*

**leucosticta** Tuck. = *Fuscopannaria leucosticta*

**leucostictoides** Ohlsson = *Fuscopannaria leucostictoides*

**malmei** C. W. Dodge (Jørgensen 2000c) = misidentification of *P. rubiginella*

**mariana** (Fr.) Müll. Arg. = *Lepidocollema marianum* (Jørgensen 2000c, Ekman et al. 2014)

**maritima** P. M. Jørg. = *Fuscopannaria maritima*

**mediterranea** Tav. = *Fuscopannaria mediterranea*

**melamphylla** Tuck. = *Lichinella melamphylla*

**microphylla** "(Sw.)" Delise = *Vahliella leucophaea*

**microphylla** var. **californica** Tuck. = *Vahliella californica*

**molybdaea** (Pers.) Tuck. = *Coccocarpia pellita*

**nigra** (Hudson) Nyl. = *Placynthium nigrum*

**nigrocincta** (Mont.) Nyl. (Mohr 1901) = *Parmeliella nigrocincta*, but a probable misidentification for North America

**pannosa** Nyl. = *Parmeliella pannosa*

**petersii** (Nyl.) Tuck. = *Placynthium petersii*

**pezizoides** (Weber) Trevisan = *Protopannaria pezizoides*

**pityrea** auct. = *P. conoplea*

**praetermissa** Nyl. = *Fuscopannaria praetermissa*



pulveracea P. M. Jørg. & Henssen = Fuscopannaria pulveracea  
 rubiginosa var. lanuginosa (Hoffm.) Zahlbr. = P. conoplea  
 saubinetii (Mont.) Nyl. = Vahliella saubinetii  
 stenophylla Tuck. = Placynthium stenophyllum  
 stylophora Vainio = Lepidocollema stylophorum (Ekman et al. 2014)  
 sonomensis Tuck. = Vestergrenopsis sonomensis (Spribille & Muggia 2012)  
 stellata (Tuck.) Nyl. = Coccocarpia stellata  
 triptophylla (Ach.) A. Massal. = Parmeliella triptophylla  
 waghornei Eckfeldt = identity uncertain, possibly Santessoniella arctophila

**PARABAGLIETTOA** Gueidan & Cl. Roux

**disjuncta** (Arnold) Krzewicka (McCune et al. 2014b)

**PARANECTRIA** Sacc.

\***alstrupii** Zhurb. (Zhurbenko & Dillman 2010)

\***oropensis** (Ces.) D. Hawks. & Piroz.

ssp. parvisseptata M. S. Cole & D. Hawks. (Cole & Hawksworth 2001) = P. oropensis (Diederich 2003)

**PARAPARMELIA** Elix & J. Johnston

alabamensis (Hale & McCull.) Elix & J. Johnston = Canoparmelia alabamensis (Hale & McCull.) Elix (Elix 2001)

**PARASCHISMATOMMA** Ertz & Tehler (Ertz & Tehler 2012)

**ochroleucum** (Zahlbr.) K. Knudsen, Ertz & Tehler Syns.: Chiodecton ochroleucum, Platygrapha plurilocularis, Schismatomma pluriloculare (Ertz & Tehler 2011)

**PARATHELIUM** Nyl. = **PYRENULA**

cuyabense Malme = Pyrenula cuyabensis

emergens Nyl. ex Müll. Arg. = Pyrenula erumpens

martinicanum Vainio = Pyrenula adacta

microcarpum Riddle = Pyrenula microtheca

subferrugineum Malme = Pyrenula circumfiniens

**PARMELIA** Ach.

**barrenoae** Divakar, M. C. Molina & A. Crespo (Hodkinson et al. 2010)

**fertilis** Müll. Arg.

**fraudans** (Nyl.) Nyl.

**hygrophila** Goward & Ahti

**mayi** Divakar, A. Crespo, M. C. Molina (Molina et al. 2011)

**neodiscordans** Hale

**omphalodes** (L.) Ach.

**pinnatifida** Kurok. (Crespo et al. 2004)

**pseudosulcata** Gyelnik

**saxatilis** (L.) Ach.

**skultii** Hale

**squarrosa** Hale

**sulcata** Taylor

acanthifolia Pers. = Parmotrema cetratum

abstrusa Vainio = Relicina abstrusa

ahtii Essl. = Xanthoparmelia ahtii

ajoensis T. H. Nash = Xanthoparmelia ajoensis

alabamensis Hale & McCull. = Canoparmelia alabamensis

albertana Ahti = Melanelixia albertana

aleuritica Nyl. = Arctoparmelia centrifuga

almquistii Vainio = Allantoparmelia almquistii

alpicola Th. Fr. = Allantoparmelia alpicola

amazonica Nyl. = *Canoparmelia amazonica*  
 andreana Müll. Arg. = *Flavopunctelia flaventior*  
 antillensis Nyl. = *Parmotremopsis antillensis*  
 appalachensis W. L. Culb. = *Punctelia appalachensis*  
 arizonica (Tuck.) Nyl. (Fink 1935) = *Omphalora arizonica*  
 arnoldii Du Rietz = *Parmotrema arnoldii*  
 arseneana Gyelnik = *Xanthoparmelia novomexicana*  
 aspera A. Massal. = *Melanohalea exasperata*  
 aspidota (Ach.) Poetsch = *Melanohalea exasperata*  
 atrofusca (Schaerer) Crombie = *Brodoa atrofusca*  
 atticoides Essl. = *Xanthoparmelia atticoides*  
 aurulenta Tuck. = *Myelochroa aurulenta*  
 austerodes Nyl. = *Hypogymnia austerodes*  
 austrosinensis Zahlbr. = *Parmotrema austrosinense*  
 baltimorensis Gyelnik & Föris = *Flavoparmelia baltimorensis*  
 birulae Elenkin var. *grumosa* Llano = *Arctoparmelia separata*  
 bitteri Lynge = *Hypogymnia bitteri*  
 bolliana Müll. Arg. = *Punctelia bolliana*  
 borrieri (Sm.) Turner = *Punctelia borrieri*  
 brunella Essl. = *Xanthoparmelia brunella*  
 caperata (L.) Ach. = *Flavoparmelia caperata*  
 caperata var. *incorrupata* (J. P. Moore) E. C. Berry = *Flavopunctelia praesignis*  
 caroliniana Nyl. = *Canoparmelia caroliniana*  
 catawbiensis (Degel.) Hale & M. Wirth = *Hypotrachyna catawbiensis*  
 centrifuga (L.) Ach. = *Arctoparmelia centrifuga*  
 cetrarioides (Delise ex Duby) Nyl. = *Cetrelia cetrarioides*  
 cetrata Ach. = *Parmotrema cetratum*  
 cetrata var. *hypotropoides* Nyl. ex Willey = *Parmotrema hypotropum*  
 chiricahuensis R. A. Anderson & W. A. Weber = *Xanthoparmelia chiricahuensis*  
 chlorochroa Tuck. = *Xanthoparmelia chlorochroa*  
 chrysantha Tuck. = [Parmotrema xanthinum \(Lendemer 2016a\)](#)  
 cirrhata Fr. = *Everniastrum cirrhatum*, but a misidentification for North America.  
 cladonia (Tuck.) Du Rietz = *Pseudevernia cladonia*  
 claudelii (Harm.) Vainio = *Parmotrema stuppeum*  
 colpodes (Ach.) Stizenb. (Fink 1935) = *Anzia colpodes*  
 commensurata Hale = *Parmotrema commensuratum*  
 concreta Stizenb. [Identity uncertain, see note under Flavoparmelia](#)  
 confoederata W. L. Culb. = *Bulbothrix confoederata*  
 congensis Stein = *Xanthoparmelia congensis*, but not found in North America north of Mexico.  
 congruens auct. = *Pseudoparmelia uleana*  
 conspersa (Ehrh. ex Ach.) Ach. = *Xanthoparmelia conspersa*  
 conspersa var. *subconspersa* (Nyl.) Gyelnik = *Flavoparmelia rutidota*  
 conspurcata (Schaerer) Vainio = *Melanelixia subargentifera*  
 coralloidea (Meyen & Flotow) Vainio (Fink 1935) = *Leptogium coralloideum*, but N. Am. reports were apparently an unknown species of *Parmotrema* (Esslinger & Tucker 2009)  
 coronata Fée = *Bulbothrix coronata*  
 crinita Ach. = *Parmotrema crinitum*  
 cristifera Taylor = *Parmotrema cristiferum*  
 croceopustulata Kurok. = *Hypotrachyna croceopustulata*  
 crozalsiana B. de Lesd. ex Harm. = *Crespoa crozalsiana*  
 cryptochlorophaea Hale = *Canoparmelia cryptochlorophaea*  
 cubensis Nyl. = *Pseudoparmelia cubensis*  
 cumberlandia (Gyelnik) Hale = *Xanthoparmelia cumberlandia*  
 cylisphora (Ach.) Vainio = *Flavoparmelia caperata*  
 darrowi J. W. Thomson = *Flavopunctelia darrowi*  
 delavayi Hue = *Hypogymnia delavayi* (Hue) Rass., but a misidentification for North America



denalii Krog = *Montanelia disjuncta*  
 densirhizinata Kurok. = *Hypotrachyna densirhizinata*  
 dentella Hale & Kurok. = *Hypotrachyna dentella*  
 dierythra Hale = *Xanthoparmelia dierythra*  
 diffractaica Essl. = *Parmotrema diffractaicum*  
 digitata Lynge = *Hypotrachyna physcioides* (Nyl.) Hale, but a misidentification for North America (?)  
 dilatata Vainio = *Parmotrema dilatatum*  
 disjuncta Erichsen = *Montanelia disjuncta*  
 dissecta Nyl. = *Hypotrachyna minarum*  
 dissensa T. H. Nash = *Xanthoparmelia dissensa*  
 dominicana Vainio = *Parmotrema dominicanum*  
 dubia (Wulfen) Schaerer = *Punctelia subrudecta* (Nyl.) Krog, but a misidentification for North America  
 duplicata var. douglasicola Gyelnik = *Hypogymnia physodes*  
 elegantula (Zahlbr.) Szatala = *Melanohalea elegantula*  
 elongata J. Hillmann = *Hypogymnia duplicata* (Spribille et al. 2010)  
 encausta (Sm.) Nyl. = *Brodoa intestiniformis*, but this species is not found in North America  
 endosulphurea (Hillm.) Hale = *Parmotrema endosulphureum*  
 endoxantha G. Merr. = *Pseudoparmelia uleana*  
 ensifolia Kurok. = *Hypotrachyna ensifolia*  
 enteromorpha Ach. = *Hypogymnia enteromorpha*  
 epiclada Hale = *Parmotrema submarginale*  
 erecta E. C. Berry = *Parmotrema perforatum*  
 eurysaca Hue = *Parmotrema eurysacum*  
 exasperata De Not. = *Melanohalea exasperata*  
 exasperatula Nyl. = *Melanohalea exasperatula*  
 eximbricata (Gyelnik) Hale & Kurok. = *Relicina eximbricata*  
 finkii Zahlbr. = *Myelochroa obsessa*  
 flaventior Stirton = *Flavopunctelia flaventior*  
 flavicans (Tuck.) Tuck. = *Flavoparmelia caperata*  
 formosana Zahlbr. = *Hypotrachyna osseoalba*  
 frondifera G. Merr. = *Punctelia bolliana*  
 fuliginosa (Wibel) Nyl. (Fink 1935) = *Melanelixia fuliginosa*, but North American reports are misidentifications (Leavitt et al. 2012)  
 furfuracea (L.) Ach. = *Pseudevernia intensa* and *P. consocians* for North American records  
 galbina Ach. = *Myelochroa galbina*  
 glabra (Schaerer) Nyl. North American records are *Melanelixia californica*  
 glabratula (Lamy) Nyl. = *Melanelixia glabratula*  
 glabroides Essl. = *Melanelixia glabroides*  
 goebelii Zenker North American reports are *Bulbothrix scortella* (Benatti & Elix 2012)  
 gondylophora Hale = *Hypotrachyna gondylophora*  
 graminicola B. de Lesd. = *Punctelia graminicola*  
 granulosa Lynge = *Montanelia disjuncta*  
 hababiana Gyelnik = *Parmotrema hababianum*  
 haitiensis Hale = *Parmotrema haitiense*  
 halei Ahti = *Melanohalea halei*  
 halseyana Tuck. (Fink 1935) = *Arctoparmelia centrifuga* (Hale & DePriest 1999, Esslinger & Tucker 2009)  
 herreana Zahlbr. = *Flavoparmelia caperata*  
 herrei Zahlbr. = *Parmotrema herrei*  
 horrescens Taylor = *Hypotrachyna horrescens*  
 huachucensis T. H. Nash = *Xanthoparmelia huachucensis*  
 hubrichtii E. C. Berry = *Hypotrachyna minarum*  
 hypoleucina J. Steiner = *Parmotrema hypoleucinum*  
 hypoleucites Nyl. = *Punctelia hypoleucites*  
 hypomelaena Hale = *Xanthoparmelia hypomelaena*  
 hypopsila Müll. Arg. = *Xanthoparmelia hypopsila*, but North American records are *X. angustiphylla*

hypotropa Nyl. = Parmotrema hypotropum  
 hypotropa var. sorediata Müll. Arg. (Fink 1935) = Parmotrema hypotropum (Esslinger & Tucker 2009)  
 hypotropoides Nyl. ex Willey = Parmotrema perforatum  
 hypotrypodes (Nyl.) Willey (Fink 1935) Apparent orthographic error for P. hypotropoides (Esslinger & Tucker 2009)  
 imbricatula Zahlbr. = Hypotrachyna imbricatula  
 incorrupta J. P. Moore = Flavopunctelia praesignis  
 incurva (Pers.) Fr. = Arctoparmelia incurva  
 infrapallida Essl. = Xanthoparmelia infrapallida  
 infumata Nyl. = Melanohalea infumata  
 internexa Nyl. = Parmotrema internexum  
 intestiniformis (Vill.) Ach. = Brodoa intestiniformis, but North American reports are B. oroarctica  
 ioanis-simae Gyelnik = Xanthoparmelia taractica, but western North American records are probably Xanthoparmelia coloradoensis  
 isidiata (Anzi) Gyelnik = Xanthoparmelia conspersa  
 isidiosa (Müll. Arg.) Hale = misidentification for North America  
 isidiotyla Nyl. = Xanthoparmelia loxodes  
 joranadia T. H. Nash = Xanthoparmelia joranadia  
 kernstockii (Lynge) Zahlbr. = Flavopunctelia flaventior  
 kerguelensis A. Wilson = chemotype of Parmelia saxatilis  
 kerguelensis auct. N. Am. = Parmelia pseudosulcata  
 kurokawae Hale = Xanthoparmelia lavicola  
 laciniatula (Flagey) Zahlbr. (Eyderdam 1960) = misidentification for North America  
 laevigata (Sm.) Ach. = Hypotrachyna laevigata  
 laevigatula Nyl. = Bulbothrix laevigatula  
 lanata (L.) Wallr. = Pseudephebe pubescens  
 latissima Fée = Parmotrema latissimum, but reports are a misidentification for North America.  
 lecanorica Hale = Xanthoparmelia lecanorica, but reports are a misidentification for North America  
 leucochlora Tuck. = Pseudoparmelia cubensis  
 lineola E. C. Berry = Xanthoparmelia lineola  
 livida Taylor = Hypotrachyna livida  
 lobulifera Degel. = Hypotrachyna imbricatula  
 lobulifera var. insensitiva Degel. = Hypotrachyna ensifolia  
 lobulifera var. luteoreagens Degel. = Hypotrachyna imbricatula  
 lobulifera var. sanguineoreagens Degel. = Hypotrachyna prolongata  
 lophyrea Ach. (Fink 1935) = Hypogymnia lophyrea  
 louisianae Hale = Parmotrema louisianae  
 loxodes Nyl. = Xanthoparmelia loxodes  
 madagascariacea (Hue) Abbayes = [Parmotrema xanthinum \(Lendemer 2016a\)](#)  
 mandshurica Asahina = Flavopunctelia soredica  
 margaritata Hue = Parmotrema margaritatum  
 martinicana Nyl. = Canoparmelia martinicana  
 maxima Hue = Parmotrema stuppeum  
 mellissii C. W. Dodge = Parmotrema mellissii  
 mesogens Nyl. (Fink 1935) Apparent typographic error for P. mesogenes Nyl = Parmotrema mesogenes, a misidentification for North America (Esslinger & Tucker 2009)  
 metarevoluta Asahina = Myelochroa metarevoluta  
 mexicana Gyelnik = Xanthoparmelia mexicana  
 michauxiana Zahlbr. = Parmotrema submarginale  
 molliuscula Ach. = misidentification for North America  
 monticola J. P. Dey = Xanthoparmelia monticola  
 mordenii Hale = Parmotrema mordenii  
 mougeotii Schaerer = Xanthoparmelia mougeotii  
 multispora A. Schneider = Melanohalea multispora  
 negativa Gyelnik = Flavoparmelia caperata  
 neoconspersa Gyelnik = Xanthoparmelia neoconspersa



nigropsoromifera T. H. Nash = *Xanthoparmelia nigropsoromifera*  
njalensis C. W. Dodge = *Bulbothrix scortella*  
novomexicana Gyelnik = *Xanthoparmelia novomexicana*  
obsessa Ach. = *Myelochroa obsessa*  
occidentalis Essl. = *Xanthoparmelia occidentalis*  
olivacea (L.) Ach. = *Melanohalea olivacea*  
olivaceoides Krog = *Melanohalea olivaceoides*  
olivaria (Ach.) Th. Fr. = *Cetrelia olivetorum*  
olivetorum Nyl. = *Cetrelia olivetorum*  
omphalodes subsp. glacialis Skult = *P. skultii*  
omphalodes subsp. pinnatifida (Kurok.) Skult = *P. pinnatifida*  
oncodes Tuck. (Fink 1935) Name not located in any available source (Esslinger & Tucker 2009)  
oostingii J. P. Dey = *Hypotrachyna oostingii*  
oregana Gyelnik = *Hypogymnia physodes*  
panniformis (Nyl.) Vainio = *Montanelia panniformis*  
perfoliata (Jacq.) Ach. (Mohr 1901) = misspelling of *P. perforata*  
perforata (Jacq.) Ach. = *Parmotrema perforatum*  
perlata (Hudson) Ach. = *Parmotrema perlatum*  
permaculata Hale = *Parmotrema eurysacum*  
perreticulata (Räsänen) Hale = *Punctelia perreticulata*  
pertusa (Schränk) Schaerer = *Menegazzia terebrata*  
phaea Tuck. (Fink 1935) = *Physcia phaea*  
physodes (L.) Ach. = *Hypogymnia physodes*  
piedmontensis Hale = *Xanthoparmelia piedmontensis*  
plittii Gyelnik = *Xanthoparmelia plittii*  
praesignis Nyl. = *Flavopunctelia praesignis*  
praesorediosa Nyl. = *Parmotrema praesorediosum*  
preperforata W. L. Culb. = *Parmotrema preperforatum*  
proboscidea Tayl. (Fink 1935) = *Parmotrema crinitum* (Hale & DePriest 1999)  
producta (Hale) J. P. Dey = *Hypotrachyna producta*  
prolixa (Ach.) Carroll = *Neofuscia pulla*, but a misidentification for North America.  
prolongata Kurok. = *Hypotrachyna prolongata*  
pseudoborreri Asahina = *Punctelia borreri*  
psoromifera Kurok. = *Xanthoparmelia psoromifera*  
pubescens (L.) Vainio = *Pseudephebe pubescens*  
pulla Ach. = *Xanthoparmelia pulla* (Ach.) Crespo et al., but a misidentification for North America  
pulvinata Fée = *Hypotrachyna pulvinata*  
pustulifera Hale = *Hypotrachyna pustulifera*  
pustulosa Essl. = *Xanthoparmelia pustulosa*  
quercina (Willd.) Vainio North American reports are *Parmelina coleae*  
rachista Hale = *Hypotrachyna prolongata*  
rampoddensis Nyl. = *Parmotrema rampoddense*  
recipienda Nyl. = *Parmotrema subcaperatum* (Kremp.) Hale., but a misidentification for North America  
reddenda Stirton = *Punctelia reddenda*  
relicina Fr. = *Relicina relicinula* (Müll. Arg.) Hale, but a misidentification for North America  
reparata Stirton = *Parmotrema cetratum*  
reticulata Taylor = *Parmotrema reticulatum*  
revoluta Flörke = *Hypotrachyna revoluta*  
rigida Lynge = *Parmotrema subrigidum* (N. Am. records only)  
robusta Degel. = *Parmotrema robustum*, but North American records are *Parmotrema gardneri*  
rockii Zahlbr. = *Hypotrachyna rockii*  
rudecta Ach. = *Punctelia rudecta*  
rutidota Hooker f. & Taylor = *Flavoparmelia rutidota*  
salacinifera Hale = *Canoparmelia salacinifera*  
santae-crucis Vainio = *Parmotrema praesorediosum*  
saximontana R. A. Anderson & W. A. Weber = *Montanelia saximontana*

scortea (Ach.) Ach. (Fink 1935) = *Parmelina tiliacea* (Hoffm.) Hale, but an apparent misidentification for North America  
 scortella Nyl. = *Bulbothrix scortella*  
 semansiana W. L. Culb. & C. F. Culb. = *Punctelia graminicola*  
 separata Th. Fr. = *Arctoparmelia separata*  
 septentrionalis (Lyng.) Ahti = *Melanohalea septentrionalis*  
 sibirica Zahlbr. = *Allantoparmelia sibirica*  
 silvestris Degel. = *Myelochroa aurulenta*  
 simulans Hale = *Parmotrema simulans*  
 sinuosa (Sm.) Ach. = *Hypotrachyna sinuosa*  
 sipeana Gyelnik = *Menegazzia terebrata*  
 sorediata (Ach.) Th. Fr. = *Montanelia sorediata*  
 soredica Nyl. = *Flavopunctelia soredica*  
 sorediosa Almb. = *Montanelia sorediata*  
 sorocheila Vainio = *Hypotrachyna sorocheila*, but North American records apparently refer to *E. catawbiense*  
 sphaerospora Nyl. (North American records) = *Pseudoparmelia uleana*  
 sphaerosporella Müll. Arg. = *Ahtiana sphaerosporella*  
 spumosa Asahina = *Parmelinopsis spumosa*  
 stenophylla (Ach.) Du Rietz = *Xanthoparmelia stenophylla*  
 stictica (Duby) Nyl. = *Punctelia stictica*  
 stuppea Taylor = *Parmotrema stuppeum*  
 stygia (L.) Ach. = *Melanelia stygia*  
 subargentifera Nyl. = *Melanelixia subargentifera*  
 subarnoldii Abbayes = *Parmotrema subarnoldii*, but a misidentification for North America north of Mexico  
 subaurifera Nyl. = *Melanelixia subaurifera*  
 subcapitata Nyl. ex Hasse = *Flavoparmelia subcapitata*  
 subcentrifuga Oxner = *Arctoparmelia subcentrifuga*  
 subcrinita auct. = *Parmotrema ultralucens*  
 subcrinita Nyl. = *Parmotrema subtinctorium*  
 subdecepiens Vainio = *Xanthoparmelia subdecepiens*  
 subelegantula Essl. = *Melanohalea subelegantula*  
 subhosseana Essl. = *Xanthoparmelia subhosseana*  
 subinvoluta Hale = *Parmotrema rampoddense*  
 subsidiosa (Müll. Arg.) C. W. Dodge = *Parmotrema subsidiosum*  
 sublaevigata (Nyl.) Nyl. = *Hypotrachyna sublaevigata*, but a misidentification for North America (Hale 1979)  
 submarginalis (Michaux) Nyl. (Fink 1935) = *Parmotrema submarginale* (Hale & DePriest 1999)  
 subobscura Vainio = *Hypogymnia subobscura*  
 subolivacea Nyl. = *Melanohalea subolivacea*  
 subpraesignis Nyl. = *Punctelia subpraesignis*  
 subquercifolia Hue = *Myelochroa galbina*  
 subramigera Gyelnik = *Xanthoparmelia subramigera*  
 subrudecta Nyl. = *Punctelia subrudecta* (Nyl.) Krog, but a misidentification for North America (Lendemer & Hodkinson 2010)  
 subrugata Kremp. = misidentification for North America  
 substygia Räsänen North American reports are *Montanelia saximontana* or *M. secwepemc*  
 subsumpta Nyl. = *Parmotrema subsumptum*  
 subtinctoria Zahlbr. = *Parmotrema subtinctorium*  
 sulphurata Nees & Flotow = *Parmotrema sulphuratum*  
 sulphorosa (Tuck.) Fink (Fink 1935) = *Myelochroa galbina* (Hale & DePriest 1999)  
 swinscowii Hale = *Parmelinopsis swinscowii*  
 taractica Kremp. = *Xanthoparmelia taractica*, but see note there  
 tasmanica Hooker f. & Taylor = *Xanthoparmelia tasmanica*  
 texana Tuck. = *Canoparmelia texana*



thysanota Kurok. = Hypotrachyna thysanota  
 tinctina Maheu & A. Gillet = Xanthoparmelia tinctina, but not found in North America  
 tinctorum Delise ex Nyl. = Parmotrema tinctorum  
 trabeculata Ahti = Melanohalea trabeculata  
 trichotera Hue = Parmotrema perlatus  
 tuberculata Gyelnik = Xanthoparmelia novomexicana  
 tubulosa (Schaerer) Bitter = Hypogymnia tubulosa  
 tucsonensis T. H. Nash = Xanthoparmelia tucsonensis  
 uleana Müll. Arg. = Pseudoparmelia uleana  
 ulophyllodes (Vainio) Savicz = Flavopunctelia soledica  
 ultralucens Krog = Parmotrema ultralucens  
 verruculifera Nyl. = Xanthoparmelia verruculifera  
 virginica Hale = Hypotrachyna virginica  
 vittata (Ach.) Röhl. = Hypogymnia vittata  
 weberi Hale = Xanthoparmelia weberi  
 wyomingica (Gyelnik) Hale = Xanthoparmelia wyomingica  
 xanthina (Müll. Arg.) Vainio = Parmotrema xanthinum  
 xanthomela Nyl. (Fink 1935) Typographic error for P. xanthomyela = Hypotrachyna endochlora  
 (Leighton) Hale, a misidentification for North America  
 zollingeri Hepp = Parmotrema zollingeri

#### **PARMELIELLA Müll. Arg.**

**appalachensis** P. M. Jørg. (Jørgensen 2000c)  
**corallinoides** (Hoffm.) Zahlbr.  
**pannosa** (Sw.) Nyl. Syn.: Pannaria pannosa  
**parvula** P. M. Jørg. (Jørgensen 2000c)  
**runderatula** (Nyl.) Hasse  
**triptophylla** (Ach.) Müll. Arg. Syn.: Pannaria triptophylla  
 arctophila (Th. Fr.) Malme = Santessoniella arctophila (Henssen 1997)  
 cheiroloba Müll. Arg. = Fuscopannaria cheiroloba  
 crossophylla (Tuck.) G. Merr. & Burnham = Santessoniella crossophylla  
 cyanolepra (Tuck.) Herre = Fuscopannaria cyanolepra  
 mariana (Fr.) P. M. Jørg. & D. J. Galloway = Lepidocollema marianum (Ekman et al. 2014)  
 lepidiota (Sommerf.) Vainio = Fuscopannaria praetermissa  
 microphylla "(Sw.)" Müll. Arg. = Vahliella leucophaea  
 plumbea (Lightf.) Vainio = Pectenium plumbea (Ekman et al. 2014)  
 praetermissa (Nyl.) P. James = Fuscopannaria praetermissa  
 saubinetii (Mont.) Zahlbr. = Vahliella saubinetii  
 stellata (Tuck.) Zahlbr. = Coccocarpia stellata  
 stylophora (Vainio) P. M. Jørg. (Jørgensen 2000c) = Lepidocollema stylophorum (Ekman et al. 2014)

#### **PARMELINA Hale**

**coleae** Argüello & A. Crespo (Argüello et al. 2007a, 2007b)  
**yalungana** (Zahlbr.) P. R. Nelson & Kepler (Nelson et al. 2013)  
 antillensis (Nyl.) Hale = Parmotrema antillensis  
 aurulenta (Tuck.) Hale = Myelochroa aurulenta  
 dissecta (Nyl.) Hale = Hypotrachyna minarum  
 galbina (Ach.) Hale = Myelochroa galbina  
 horrescens (Taylor) Hale = Hypotrachyna horrescens  
 metarevoluta (Asahina) Hale = Myelochroa metarevoluta  
 minarum (Vainio) Skorepa = Hypotrachyna minarum  
 obsessa (Ach.) Hale = Myelochroa obsessa  
 quercina (Willd.) Hale North American reports are P. coleae  
 spumosa (Asahina) Hale = Hypotrachyna spumosa  
 swinscowii (Hale) Hale = Hypotrachyna swinscowii  
 tiliacea (Hoffm.) Hale North American reports are misidentifications

**PARMELINOPSIS** Elix & Hale = **HYPOTRACHYNA** (Divakar et al. 2013)

*cryptochlora* (Vainio) Elix & Hale = *Hypotrachyna cryptochlora*  
*horrescens* (Taylor) Elix & Hale = *Hypotrachyna horrescens*  
*minarum* (Vainio) Elix & Hale = *Hypotrachyna minarum*  
*spumosa* (Asahina) Elix & Hale = *Hypotrachyna spumosa*  
*swinscowii* (Hale) Elix & Hale = *Hypotrachyna swinscowii*

**PARMELIOPSIS** Nyl.

**ambigua** (Wulfen) Nyl. Syn.: *Foraminella ambigua*  
**capitata** R. C. Harris ex J. W. Hinds & P. L. Hinds (Hinds & Hinds 1998)  
**esorediata** (Degel.) Nordnes (McCarthy et al. 2012)  
**hyperopta** (Ach.) Arnold Syn.: *Foraminella hyperopta*  
**subambigua** Gyelnik Syns.: *Foraminella subambigua*  
*aleurites* (Ach.) Nyl. = *Imshaugia aleurites*  
*diffusa* (Weber) Riddle = *P. hyperopta*  
*halei* (Tuck.) Hale = *P. subambigua*  
*placorodia* (Ach.) Nyl. = *Imshaugia placorodia*

**PARMENTARIA** Fée = **PYRENULA**

*astroidea* Fée = *Pyrenula astroidea*  
[*Pleurotheliopsis australiensis* (Müll. Arg.) Zahlbr.] = ?  
*nana* (Zahlbr.) R. C. Harris = *Anthracotheceium nanum*  
*rappii* Zahlbr. = *Pyrenula leucostoma* Ach.  
*ravenelii* (Tuck.) Müll. Arg. = *Pyrenula ravenelii*

**PARMOTREMA** A. Massal.

**arnoldii** (Du Rietz) Hale Syn.: *Parmelia arnoldii*  
**austrosinense** (Zahlbr.) Hale Syn.: *Parmelia austrosinensis*  
**cetratum** (Ach.) Hale Syns.: *Parmelia cetrata*, *P. herrei*, *Rimelia cetrata* (Blanco et al. 2005)  
**commensuratum** (Hale) Hale Syns.: *Parmelia commensuratum*, *Rimelia commensuratum*  
**conferendum** Hale Syns.: *Canomaculina conferenda*, *Rimeliella conferenda*  
**crinitum** (Ach.) M. Choisy Syn.: *Parmelia crinita*, *Parmelia proboscidea*  
**cristiferum** (Taylor) Hale Syn.: *Parmelia cristifera*  
**despectum** Kurok. (Kurokawa 2001)  
**diffractaicum** (Essl.) Hale Syns.: *Parmelia diffractaica*, *Rimelia diffractaica*  
**dilatatum** (Vainio) Hale Syn.: *Parmelia dilatata*  
**dominicanum** (Vainio) Hale Syn.: *Parmelia dominicana*  
**endosulphureum** (Hillm.) Hale Syn.: *Parmelia endosulphurea*  
**eurysacum** (Hue) Hale Syns.: *Parmelia eurysaca*, *P. permaculata*  
**gardneri** (C. W. Dodge) Sérus. Syn.: *Parmelia robusta*  
**hababianum** (Gyelnik) Hale Syn.: *Parmelia hababiana*  
**haitiense** (Hale) Hale Syns.: *Parmelia haitiensis*, *Canomaculina haitiensis*  
**herrei** (Zahlbr.) Spielmann & Marcelli (Marcelli et al. 2011)  
**hypoleucinum** (J. Steiner) Hale Syn.: *Parmelia hypoleucina*  
**hypotropum** (Nyl.) Hale Syns.: *Parmelia hypotropa*, *Parmelia hypotropa* var. *sorediata*, *P. cetrata* var. *hypotropoides*  
**internexum** (Nyl.) Hale Syn.: *Parmelia internexa*  
**louisianae** (Hale) Hale Syn.: *Parmelia louisianae*  
**margaritatum** (Hue) Hale Syn.: *Parmelia margaritata*  
**mellissii** (C. W. Dodge) Hale Syn.: *Parmelia mellissii*  
**mordenii** (Hale) Hale Syn.: *Parmelia mordenii*  
**neotropicum** Kurok. ex Hale Syns.: *Canomaculina neotropica*, *Rimeliella neotropica*  
**perforatum** (Jacq.) A. Massal. Syns.: *Parmelia perforata*, *P. erecta*, *P. hypotropoides*  
**perlatus** (Hudson) M. Choisy Syns.: *Parmelia perlata*, *P. trichotera*  
**praesorediosum** (Nyl.) Hale Syns.: *Parmelia praesorediosa*, *P. santae-crucis*  
**preperforatum** (W. L. Culb.) Hale Syn.: *Parmelia preperforata*



**rampoddense** (Nyl.) Hale Syns.: *Parmelia rampoddensis*, *P. subinvoluta*  
**reticulatum** (Taylor) M. Choisy Syns.: *Parmelia reticulata*, *Rimelia reticulata*  
**rubifaciens** (Hale) Hale  
**simulans** (Hale) Hale Syns.: *Parmelia simulans*, *Rimelia simulans*  
**stuppeum** (Taylor) Hale Syns.: *Parmelia stuppea*, *P. claudelii*, *P. maxima*  
**subisidiosum** (Müll. Arg.) Hale Syns.: *Parmelia subisidiosa*, *Rimelia subisidiosa*  
**submarginale** (Michaux) DePriest & B. Hale Syns.: *Parmelia michauxiana*, *P. epiclada* (DePriest & Hale 1998), *P. submarginalis*  
**subrigidum** Egan (Egan et al. 2005)  
**subsumptum** (Nyl.) Hale Syns.: *Canomaculina subsumpta*, *Rimeliella subsumpta*, *Parmelia subsumpta*  
**subtinctorium** (Zahlbr.) Hale Syns.: *Canomaculina subtinctoria*, *Rimeliella subtinctoria*, *Parmelia subtinctoria*  
**sulphuratum** (Nees & Flotow) Hale Syn.: *Parmelia sulphurata*  
**tinctorum** (Delise ex Nyl.) Hale Syn.: *Parmelia tinctorum*  
**ultralucens** (Krog) Hale Syns.: *Parmelia ultralucens*, *P. subcrinita* auct. non Nyl.  
**wrightii** L. I. Ferraro & Elix (Seavey & Seavey 2012)  
**xanthinum** (Müll. Arg.) Hale Syns.: *Parmelia xanthina*, *P. chrysantha*, *P. madagascariacea*  
**zollingeri** (Hepp) Hale Syn.: *Parmelia zollingeri*  
 chinense (“Osbeck”) Hale & Ahti = *P. perlatum* (Hawksworth 2004)  
 crozalsianum (B. de Lesd. ex Harm.) Hawksworth = *Crespoa crozalsiana* (Lendemer & Hodgkinson 2012)  
[madagascariaceum \(Hue\) Hale = \*P. xanthinum\* \(Lendemer 2016a\)](#)  
 michauxianum (Zahlbr.) Hale = *P. submarginale*  
 ochrocrinitum Elix & J. Johnst. Erroneously mapped for North America (Michlig & Ferraro 2010)  
 rigidum (Lynge) Hale North American records are *P. subrigidum*  
 robustum (Degel.) Hale North American records are *P. gardneri*

#### **PARMOTREMOPSIS** Elix & Hale

**antillensis** (Nyl.) Elix & Hale Syns.: *Parmelina antillensis*, *Parmelia antillensis*

#### **PARMULARIA** Nilson

brouardii B. de Lesd. = a *Lecanora* sp.  
 novomexicana B. de Lesd. = Identity uncertain

#### **PARVOPLACA** Arup, Söchting & Frödén (Arup et al. 2013)

[nigroblastidiata Arup, Halici & Vondrák \(Arup et al. 2015\)](#)  
**tirolensis** (Zahlbr.) Arup, Söchting & Frödén Syn.: *Caloplaca subolivacea*, *C. tirolensis*

#### **PATRICIOMYCES** D. Hawksw.

**\*valentinianus** D. Hawks. (Cole & D. Hawksworth 2001)

#### **PAULIA** Fée

**pyrenoides** (Nyl.) Henssen Syn.: *Thyrea pyrenoides*

#### **PECCANIA** A. Massal. ex Arnold

**arizonica** Tuck. ex Herre  
**kansana** (Tuck.) Forssell Syn.: *Omphalaria kansana*  
**kansuensis** (H. Magn.) M. Schultz ined. (McCune et al. 2014b)  
**subnigra** (B. de Lesd.) Wetmore Syns.: *Placynthium subnigrum*, *Synalissa subnigra*  
**texana** (Tuck.) Wetmore Syn.: *Synalissa texana*  
**tiruncula** (Nyl.) Henssen (Tretiach & Schultz 2007)

#### **PELTIGERA** Willd.

**aphthosa** (L.) Willd.  
**aquatica** Miadl. & Lendemer (Miadlikowska et al. 2014b)  
**britannica** (Gyelnik) Holt.-Hartw. & Tønsberg

**canina** (L.) Willd.  
**castanea** Goward, Goffinet & Miądl. (Goffinet et al. 2003)  
**chionophila** Goward & Goffinet (Goward & Goffinet 2000)  
**cinnamomea** Goward  
**collina** (Ach.) Schrader  
**degenii** Gyelnik  
**didactyla** (With.) J. R. Laundon  
**elisabethae** Gyelnik  
**evansiana** Gyelnik  
**extenuata** (Nyl. ex Vainio) Lojka (Goffinet et al. 2003)  
**fibrilloides** (Gyelnik) Vitik. (Vitikainen 2004)  
**frippii** Holt.-Hartw. (Vitikainen 1994)  
**gowardii** Lendemer & H. O'Brien (Lendemer & O'Brien 2011)  
**horizontalis** (Hudson) Baumg.  
**hydrothyria** Miądl. & Lutzoni Syn.: *Hydrothyria venosa* (Miądlukowska & Lutzoni 2000)  
**hymenina** (Ach.) Delise  
**kristinssonii** Vitik.  
**latiloba** Holt.-Hartw. (Holtan-Hartwig 2005)  
**lepidophora** (Nyl. ex Vainio) Bitter  
**leucophlebia** (Nyl.) Gyelnik  
**lyngei** Gyelnik (Dillman et al. 2012)  
**malacea** (Ach.) Funck  
**membranacea** (Ach.) Nyl.  
**monticola** Vitik. (Vitikainen 2004)  
**neckeri** Hepp ex Müll. Arg.  
**neopolydactyla** (Gyelnik) Gyelnik  
**pacifica** Vitik.  
**phyllidiosa** Goffinet & Miądl. (Goffinet & Miądlukowska 1999)  
**polydactylon** (Necker) Hoffm.  
**ponojensis** Gyelnik  
**praetextata** (Flörke ex Sommerf.) Zopf  
**retifoveata** Vitik.  
**rufescens** (Weiss) Humb.  
**scabrosa** Th. Fr.  
**scabrosella** Holt.-Hartw.  
**tartarea** (Llano) Vitik. (Vitikainen 2006)  
**venosa** (L.) Hoffm.  
 aphthosa f. complicata (Th. Fr.) Zahlbr. = *P. leucophlebia*  
 aphthosa var. variolosa A. Massal. = *P. leucophlebia*  
 avenosa Gyeln  
 canina var. rufescens (Weiss) Mudd = *P. rufescens*  
 canina var. rufescens f. innovans (Körber) J. W. Thomson = *P. praetextata*  
 canina var. spuria (Ach.) Schaerer = *P. didactyla*  
 didactyla var. extenuata (Nyl. ex Vainio) Goffinet & Hastings (Goffinet & Hastings 1995) = *P. extenuata*  
 dolichorrhiza (Nyl.) Nyl. = *P. polydactylon*  
 erumpens (Taylor) Elenkin = *P. didactyla*  
 hazslinszkyi Gyelnik = *P. extenuata*  
 horizontalis (Hudson) Baumg. f. zopfii (Gyelnik) J. W. Thomson This name has often been used for *P. elisabethae*  
 lactucifolia (With.) J. R. Laundon = *P. hymenina*  
 occidentalis sensu Kristinsson = *P. kristinssonii*  
 occidentalis (E. Dahl) Kristinsson = *P. neopolydactyla*  
 polydactyla var. hymenina (Ach.) Flotow = *P. hymenina*  
 polydactyla var. neopolydactyla Gyelnik = *P. neopolydactyla*  
 praecanina Gyelnik (Gyelnik 1931) no type designated, identity uncertain



pulverulenta (Taylor) Kremp. = *P. scabrosa* Th. Fr. for North American records  
scutata (Dickson) Duby = *P. collina*  
sorediata (Schaerer) Fink (Fink 1935) = *P. didactyla* (Vitikainen 1994)  
spuria (Ach.) DC. = *P. didactyla*  
variolosa (A. Massal.) Gyelnik = *P. leucophlebia*  
zopfii Gyelnik (Fink 1935) = *P. horizontalis* (Vitikainen 1994)

#### **PELTULA** Nyl.

**bolanderi** (Tuck.) Wetmore Syn.: *Heppia bolanderi*  
**clavata** (Kremp.) Wetmore  
**corticola** Büdel & R. Sant. (Büdel et al. 2007)  
**cylindrica** Wetmore  
**euploca** (Ach.) Poelt ex Ozenda & Clauzade Syns.: *Heppia euploca*, *H. guepinii*, *H. polyphylla*  
**farinosa** Büdel (Büdel & Nash 2002)  
**michoacanensis** (B. de Lesd.) Wetmore  
**obscurans** (Nyl.) Gyelnik var. **obscurans**  
**obscurans** var. **deserticola** (Zahlbr.) Wetmore Syn.: *Heppia deserticola*  
**obscurans** var. **hassei** (Zahlbr.) Wetmore Syn.: *Heppia hassei*  
**omphaliza** (Nyl.) Wetmore  
**patellata** (Bagl.) Swinscow & Krog Syn.: *Heppia leptopholis*, *H. polyspora*, *H. terrena*  
**placodizans** (Zahlbr.) Wetmore Syn.: *Heppia placodizans*  
**psammophila** (Nyl.) Egea (Büdel & Nash 2002)  
**radicata** (Ach.) Nyl.  
**richardsii** (Herre) Wetmore Syn.: *Heppia richardsii*  
**sonorensis** Büdel & T. H. Nash  
**tortuosa** (Nees) Wetmore Syn.: *Heppia tortuosa*  
**zahlbruckneri** (Hasse) Wetmore Syn.: *Heppia zahlbruckneri*  
*polyspora* (Tuck.) Wetmore = *P. patellata*

**PERFORARIA** Müll. Arg. = **COCCOTREMA**  
*minuta* Degel. = *Coccotrema pocillarium*

#### **PERIDIOTHELIA** D. Hawksw.

<sup>+</sup>**fuliguncta** (Norman) D. Hawksw. (Aptroot 2002d)  
<sup>+</sup>**grandiuscula** (Anzi) D. Hawksw.

#### **PERIGRAPHA** Hafellner

<sup>\*</sup>**superveniens** (Nyl.) Hafellner (Diederich 2003)

#### **PERTUSARIA** DC.

**alaskensis** Erichsen  
**albescens** (Hudson) M. Choisy & Werner  
**alpina** Hepp ex Ahles  
**andersonii** Lendemer (Lendemer 2009c)  
**appalachensis** Lendemer, R. C. Harris & Elix (Lendemer et al. 2008a)  
**atra** Lynge  
**azulensis** B. de Lesd. (Lumbsch & Nash 1999)  
**borealis** Erichsen  
**brattiae** Lumbsch & T. H. Nash (Lumbsch & Nash 1999)  
**bryontha** (Ach.) Nyl.  
**californica** Dibben  
**carneopallida** (Nyl.) Anzi  
**chiodectonoides** Bagl. ex A. Massal.  
**coccodes** (Ach.) Nyl. (Tønsberg 1999a)  
**commutata** Müll. Arg. (Lücking et al. 2011b)  
**consocians** Dibben

**copiosa** Erichsen  
**coriacea** (Th. Fr.) Th. Fr.  
**dactylina** (Ach.) Nyl.  
**epixantha** R. C. Harris  
**excludens** Nyl.  
**expolita** R. C. Harris  
**flavicunda** Tuck.  
**flavocorallina** Coppins & Muhr  
**floridana** Dibben  
**geminipara** (Th. Fr.) C. Knight ex Brodo Syn.: *Ochrolechia geminipara*  
**glaucomela** (Tuck.) Nyl. Syn.: *Lecanora glaucomela*  
**globularis** (Ach.) Tuck.  
**glomerata** (Ach.) Schaerer  
**hakkodensis** Yasuda ex Räsänen  
**hymenea** (Ach.) Schaerer  
**hypothamnolica** Dibben  
**iners** R. C. Harris  
**islandica** Bratt, Lumbsch & Schmitt (Schmitt et al. 2006)  
**lecanina** Tuck.  
**leioplaca** DC.  
**macounii** (I. M. Lamb) Dibben Syn.: *Melanaria macounii*  
**mariae** B. de Lesd. (Lumbsch & Nash 1999)  
**mccroryae** Björk, Goward & T. Sprib. (Spribille et al. 2010)  
**moreliensis** B. de Lesd. (Nash et al. 1998)  
**neolecania** Lumbsch & T. H. Nash ([Lendemmer et al. 2013](#))  
**neoscotica** I. M. Lamb  
**obruta** R. C. Harris  
**occidentalis** Bratt, Lumbsch & Schmitt (Schmitt et al. 2006)  
**octomela** (Norman) Erichsen  
**oculata** (Dickson) Th. Fr.  
**ostiolata** Dibben  
**panyrga** (Ach.) A. Massal.  
**papillata** (Ach.) Tuck.  
**paratuberculifera** Dibben  
**plittiana** Erichsen  
**propinqua** Müll. Arg.  
**pruinifera** Erichsen  
**pseudocorallina** (Lilj.) Arnold  
**pupillaris** (Nyl.) Th. Fr.  
**pustulata** (Ach.) Duby  
**rhexostoma** Nyl.  
**rubefacta** Erichsen  
**saximontana** Wetmore  
**sinusmexicani** Dibben  
**sommerfeltii** (Flörke ex Sommerf.) Fr.  
**stenhammarii** Hellbom  
**subambigens** Dibben  
**subdactylina** Nyl.  
**subobducens** Nyl.  
**suboculata** Brodo & Dibben  
**subpertusa** Brodo  
**sulcata** Dibben  
**tejocotensis** B. de Lesd. (Lumbsch et al. 1999)  
**tetrathalamia** (Fée) Nyl.  
**texana** Müll. Arg.  
**trochiscea** Norman



**valliculata** Dibben  
**ventosa** Malme  
**virensica** R. C. Harris  
**wulfenioides** B. de Lesd.  
**xanthodes** Müll. Arg.  
**zeorina** Erichsen  
 aleutensis Erichsen = *P. alaskensis*  
 amara (Ach.) Nyl. = *Variolaria amara*  
 amara var. flotowiana (Flörke) Vainio = *Variolaria amara*, at least for Europe  
 ambigens (Nyl.) Tuck. = *P. subambigens*, for North American records  
 arizonica Dibben = *P. tejocotensis*  
 bryophaga Erichsen = *Ochrolechia bryophaga*  
 canadensis Stirton = *P. pustulata*  
 ceuthocarpa (Sm.) Turner & Borrer = *P. excludens*  
 ceuthocarpoides Zahlbr. = *P. excludens*  
 communis DC. (Mohr 1901) = *P. pertusa*, a misidentification for North America  
 concentrica Erichsen Type not found. May be *Variolaria multipunctoides*  
 coriacea var. obducens (Nyl.) Vainio = *P. coriacea*  
 diffusilis Erichsen = *P. glomerata*  
 diluta Björk, G. Thor & T. B. Wheeler (Spribille et al. 2009) = *Gyalectaria diluta*  
 discoidea (Pers.) Malme = *P. albescens*  
[disticha Erichsen = \*P. texana\* \(Dibben 1980\)](#)  
 finkii Zahlbr. ex Fink = *P. rhexostoma*  
 flavida (DC.) J. R. Laundon = a European taxon, not in North America  
 freyi Erichsen = *Megaspora verrucosa*  
 globulifera (Turner) A. Massal. (Fink 1935) = *P. albescens* (Esslinger & Tucker 2009)  
 granulata (Ach.) Müll. Arg. = *P. wulfenioides* for North American records  
 hemisphaerica (Flörke) Erichsen = a European taxon, not in North America  
 hultenii Erichsen = *Ochrolechia subplicans* subsp. *hultenii*  
 laevigata (Nyl.) Arnold non (Th. Fr.) Anzi = *Variolaria trachythallina*  
 lecanina subsp. nigra Fink ex Hedrick = *Variolaria ophthalmiza*  
 leioterella Erichsen = *P. macounii* for North American reports  
 leucostoma (Ach.) A. Massal. = *P. leioplaca*  
 lutescens (Hoffm.) Lamy = *P. flavida*, but not in North America  
 marginata Nyl. = *P. propinqua*  
 microsticta (Sm. & Sow.) Erichsen = *P. excludens*  
 monogona Nyl. = *P. excludens* for North American records  
 multipuncta (Turner) Nyl. = misidentification for North America  
 multipunctoides Dibben = *Variolaria multipunctoides*  
 nolens Nyl. = *P. chiodectonoides*  
 ocellata (Wallr.) Körber = misidentification for North America  
 ophthalmiza (Nyl.) Nyl. = *Variolaria ophthalmiza*  
 pertusa (Weigel) Tuck. = misidentification for North America  
 pocillum Cumm. (Eyderdam 1960) = apparent nomen nudum of uncertain identity  
 protuberans (Sommerf. ex Th. Fr.) Th. Fr. = *P. carneopallida*  
 pulchella Malme = *Varicellaria velata* (Archer & Messuti 1997)  
 raesaenenii Erichsen = misidentification for North America  
 rhodoleuca Th. Fr. = *Ochrolechia rhodoleuca*  
 rubescens Erichsen = *P. propinqua*  
 santamonicae Dibben = *Varicellaria velata* (Archer & Messuti 1997)  
 scutellaris (Schaerer) Hue (Fink 1935) = *P. albescens* (Esslinger & Tucker 2009)  
 shenandoensis Hale & Dibben = *P. plittiana* (Lendemer & Harris 2012)  
[subamplicata Nyl. Erroneous name created by typographic error, first appearing in Egan \(1987\)](#)  
 subplicans Nyl. = *Ochrolechia subplicans*  
 subpupillaris Vězda = *P. glaucomela*  
 tabuliformis Erichsen = *P. leioplaca*

taeniata Erichsen = *P. zeorina*  
torquata Müll. Arg. = *P. propinqua*  
trachydactyla Vainio = identity uncertain, possibly an *Ochrolechia* sp.  
trachythallina Erichsen = *Variolaria trachythallina*  
tuberculifera Nyl. = misidentification for North America; most specimens are *P. paratuberculifera*  
tuckermanii Erichsen = *P. subobducens*  
velata (Turner) Nyl. = *Varicellaria velata* (Schmitt et al. 2012)  
waghornei Hulting = *Variolaria waghornei*  
wulfenii DC. = *P. hymenea*  
xanthostoma (Sommerf.) Fr. = *Ochrolechia xanthostoma*

#### **PETRACTIS** Fr.

**clausa** (Hoffm.) Kremp. (Dillman et al. 2012)  
**farlowii** (Tuck. ex Nyl.) Vězda Syn.: *Gyalecta farlowii*

#### **PEZIZELLA** Fuckel

\***epithallina** (W. Phillips & Plowr.) Sacc. (Diederich 2003)

#### **PHACOGRAPHA** Hafellner (Hafellner 2009)

\***glaucomaria** (Nyl.) Hafellner Syn.: *Leciographa glaucomaria*, *Opegrapha glaucomaria*

#### **PHACOPSIS** Tul.

\***cephalodioides** (Nyl.) Triebel & Rambold (Diederich 2003)  
\***doerfeltii** Alstrup & Scholz (Scholz 1998)  
\***fusca** (Triebel & Rambold) Diederich (Diederich 2003)  
\***oxyspora** (Tul.) Triebel & Rambold Syn.: *Abrothallus oxysporus*, *Lecidea oxyspora*, *Nesolechia oxyspora*  
\***thallicola** (A. Massal.) Triebel & Rambold Syn.: *Nesolechia thallicola*  
\***vulpina** Tul.  
\***huuskonenii** Räsänen = *Raesaenenia huuskonenii* (Divakar et al. 2015)  
\***oxyspora** var. *defecta* Triebel & Rambold = *P. oxyspora*  
\***oxyspora** var. *fusca* Triebel & Rambold = *P. fusca*

#### **PHACOTHECIUM** Trevisan

\***varium** (Tul.) Trevisan Syn.: *Opegrapha physciaria* (Hafellner 2009)

#### **PHAEOCALICIUM** A.F.W. Schmidt

+**betulinum** (Nyl.) Tibell (Selva & Tibell 1999)  
+**boreale** (Nyl.) Tibell (McCune et al. 2014b)  
+**compressulum** (Nyl. ex Vainio) A.F.W. Schmidt Syn.: *Mycocalicium compressulum*  
+**curtisii** (Tuck.) Tibell Syn.: *Calicium curtisii*  
+**flabelliforme** Tibell (Selva & Tibell 1999)  
+**matthewsianum** Selva & Tibell (Selva & Tibell 1999)  
+**minutissimum** (G. Merr.) Selva Syn.: *Calicium minutissimum*, *Stenocybe minutissima* (Selva & Tibell 1999)  
+**polyporaenum** (Nyl.) Tibell  
+**populneum** (Brond. ex Duby) A.F.W. Schmidt Syn.: *Calicium populneum*  
+**praecedens** (Nyl.) A.F.W. Schmidt  
+**tremulicola** (Norrlin ex Nyl.) Tibell Syn. *Stenocybe tremulicola* (Tibell 1996; Selva & Tibell 1999)

#### **PHAEOGRAPHINA** Müll. Arg.

*asteroides* Fink = *Phaeographis asteroides*  
*caesiopruinosa* (Fée) Müll. Arg. = *Platygramme caesiopruinosa*  
*columbina* (Tuck.) Zahlbr. = *Fissurina columbina*  
*explicans* Fink = *Leiorreuma explicans*  
*plurifera* (Nyl.) Fink = *Platygramme caesiopruinosa*



quassiicola (Fée) Müll. Arg. = Thecaria quassiicola  
scalpturata (Ach.) Müll. Arg. = Phaeographis scalpturata

#### **PHAEOGRAPHIS** Müll. Arg.

**arthonioides** (Vainio) Zahlbr.  
**asteroides** (Fink) Lendemer Syn.: Phaeographina asteroides (Lendemer & Knudsen 2008b)  
**atromaculata** (A. W. Archer) A. W. Archer (Lendemer & Knudsen 2008b)  
**brasiliensis** (A. Massal.) Kalb & Matthes-Leicht (Archer 2006)  
**delicatula** Common & Lücking (Lücking et al. 2011b)  
**dendritica** (Ach.) Müll. Arg. Syn.: Graphis dendritica  
**dendriticella** Müll. Arg.  
**erumpens** (Nyl.) Müll. Arg.  
**flavescens** Dal Forno & Eliasaro (Lücking et al. 2011b)  
**haematites** (Fée) Müll. Arg.  
**inconspicua** (Fée) Müll. Arg. (Lücking et al. 2011b)  
**intricans** (Nyl.) Staiger Syn.: Sarcographa intricans (Staiger 2002)  
**inusta** (Ach.) Müll. Arg.  
**leiogrammodes** (Kremp.) Müll. Arg. (Lücking et al. 2011b)  
**lobata** (Eschw.) Müll. Arg.  
**major** (Kremp.) Lücking (Lücking et al. 2011b)  
**multicolor** R. C. Harris  
**nylanderii** (Vainio) Zahlbr. (Lücking et al. 2011b)  
**oricola** Lendemer & R. C. Harris (Lendemer & Harris 2014a)  
**punctiformis** (Eschw.) Müll. Arg.  
**scalpturata** (Ach.) Staiger (Lücking et al. 2011b)  
**schizoloma** (Müll. Arg.) Müll. Arg. (Lücking et al. 2011b)  
**smithii** (Leighton) B. de Lesd. (Tønsberg 1999a)  
**subfulgurata** (Nyl.) Zahlbr.  
**tortuosa** (Ach.) Müll. Arg.  
exaltata (Mont. & Bosch) Müll. Arg. = Leiorreuma exaltatum  
eulectra (Tuck.) Zahlbr. = Graphis eulectra  
lyellii (Sm.) Zahlbr. = misidentification for North America  
patellula (Fée) Müll. Arg. (Fink 1935) = Leiorreuma patellulum  
sericea (Eschw.) Müll. Arg. = Leiorreuma sericea  
sexloculata Fink = P. arthonioides  
subtigrina (Vainio) Zahlbr. = P. brasiliensis

#### **PHAEOPHYSCIA** Moberg

**adiastola** (Essl.) Essl. Syn.: Physcia adiaastola  
**ciliata** (Hoffm.) Moberg Syns.: Physcia ciliata, P. obscura auct.  
**constipata** (Norrlin & Nyl.) Moberg Syn.: Physcia constipata  
**decolor** (Kashiw.) Essl.  
**endococcina** (Körber) Moberg Syns.: Physcia endococcina, P. lithotodes, (?) P. columbiana  
**endococcinodes** (Poelt) Essl. Syn.: Physcia endococcinodes  
**erythrocardia** (Tuck.) Essl.  
**hirsuta** (Mereschk.) Essl. Syn.: Physcia hirsuta  
**hirtella** Essl.  
**hispidula** (Ach.) Essl. Syns.: Physcia hispidula, P. setosa  
**insignis** (Mereschk.) Moberg  
**kairamoi** (Vainio) Moberg Syn.: Physcia kairamoi  
**leana** (Tuck.) Essl. Syn.: Physcia leana  
**nigricans** (Flörke) Moberg Syn.: Physcia nigricans  
**orbicularis** (Necker) Moberg Syn.: Physcia orbicularis, P. virella  
**pusilloides** (Zahlbr.) Essl. Syn.: Physcia pusilloides  
**rubropulchra** (Degel.) Essl. Syns.: Physcia orbicularis f. rubropulchra, P. endochrysea, P. rubropulchra  
**sciastra** (Ach.) Moberg Syns.: Physcia sciastra, P. lithotea

**squarrosa** Kashiw. (Moberg 1995) Syn: Physcia lacinulata, for North American records  
cernohorskyi (Nádv.) Essl. = P. hirsuta (Esslinger 2004b)  
chloantha (Ach.) Moberg = Physciella chloantha  
imbricata sensu Esslinger (1978) = P. squarrosa  
imbricata (Vainio) Essl. = P. hispidula  
melanchra (Hue) Hale = Physciella melanchra  
nepalensis (Poelt) D. D. Awasthi = Physciella nepalensis

**PHAEOPYXIS** Rambold & Triebel (Rambold & Triebel 1990)

\***punctum** (A. Massal.) Rambold, Triebel & Coppins (Rambold & Triebel 1990)

**PHAEORRHIZA** H. Mayrhofer & Poelt

**nimbosa** (Fr.) H. Mayrhofer & Poelt Syn.: Rinodina nimbosa, R. phaeocarpa  
**sareptana** (Tomin) H. Mayrhofer & Poelt

**PHAEOSPORA** Hepp ex Stein

\***arctica** Horáková & Alstrup  
\***catolechiae** Zopf (Zhurbenko 2014)  
\***parasitica** (Lönnr.) Arnold  
\***rimosicola** (Leighton ex Mudd) Hepp ex Stein Syn.: Pyrenulella endococcoidea

**PHAEOSPOROBOLUS** D. Hawksw. & Hafellner

\***alpinus** R. Sant., Alstrup & D. Hawksw. = Lichenostigma alpinum (Ertz et al. 2014)  
\***fellhanerae** R. C. Harris & Lendemer (Harris & Lendemer 2009) = Lichenostigma fellhanerae (Ertz et al. 2014)  
\***usneae** D. Hawksw. & Hafellner = Lichenostigma maureri (Ertz et al. 2014)

**PHAEOTREMA** Müll. Arg.

**californicum** (Tuck.) Zahlbr. = Thelotrema californicum  
**meiospermum** (Nyl.) Müll. Arg. = Melanotrema meiospermum

**PHARCIDIA** Körber = STIGMIDIUM

\***dispersa** (J. Lahm ex Körber) Winter ex Rabenh. = Zwackhiomyces dispersus  
\***ephebes** Henssen = Stigmidium ephebes  
\***epicymatia** (Wallr.) Winter = a Stigmidium spp.  
\***parva** Henssen (see Stigmidium)

**PHLOEOPECCANIA** J. Steiner (Schultz & Büdel 2005)

**major** Henssen ined. (Schultz & Büdel 2005)  
**pulvinulina** J. Steiner (Schultz & Büdel 2005)

**PHLYCTELLA** Kremp.

**andensis** Nyl.

**PHLYCTIDIA** Müll. Arg.

**ludoviciensis** Müll. Arg. = Phlyctis boliviensis

**PHLYCTIS** Wallr.

**agelaea** (Ach.) Flotow  
**argena** (Sprengel) Flotow  
**speirea** G. Merr.  
**boliviensis** Nyl. Syn.: Phlyctidia ludoviciensis (Lendemer & R. C. Harris 2014d)  
**ludoviciensis** (Müll. Arg.) Lendemer (Lendemer 2005a) = P. boliviensis  
**willeyi** Tuck. = *Leucodecton willeyi*



**PHOEBUS** R. C. Harris & Ladd (Harris & Ladd 2005, 2007)  
**hydrophobius** R. C. Harris & Ladd (Harris & Ladd 2005, 2007)

**PHOMA** Fr.

- \***caloplacae** D. Hawksw. (Lawrey et al. 2012)
- \***fuliginosa** M. S. Cole & D. Hawksw. (Hawksworth & Cole 2004)
- \***grumantiana** Zhurb. & Diederich (Diederich et al. 2007)
- \***lobariae** Diederich & Etayo (Hafellner et al. 2002)
- \***lobariicola** Alstrup (Spribille et al. 2010)
- \***peltigerae** (P. Karsten) D. Hawksw. (Zhurbenko & Laursen 2003)
- \***puncteliae** Diederich & Lawrey (Lawrey et al. 2012)
- \***cladoniicola** Diederich, Kocourk. & Etayo (Diederich et al. 2007) = *Didymocyrtis cladoniicola* (Ertz et al. 2015a)
- \***cytospora** (Vouaux) D. Hawks. (Cole & D. Hawksworth 2001) = *Briancoppinsia cytospora* (Diederich et al. 2012; Kocourkova et al. 2012)
- \***physciicola** Keissler (Alstrup & Cole 1998) = *Didymocyrtis epiphyscia* (Ertz et al. 2015a)
- \***xanthomendozae** Diederich & Freebury (Lawrey et al. 2012) = *Didymocyrtis xanthomendozae* (Ertz et al. 2015a)

**PHRAGMONAEVIA** Rehm

- \***fuckelii** Rehm = *Corticifraga fuckelii*

**PHYLLISCUM** Nyl.

- demangeonii** (Moug. & Mont.) Nyl. Syn.: *Thyrea demangeonii*
- tenue** Henssen

**PHYLLOBLASTIA** Vainio

- fortuita** Llop & Gómez-Bolea (Carlberg 2016)

**PHYLLOPSORA** Müll. Arg.

- breviuscula** (Nyl.) Müll. Arg. (Timdal 2011)
- buettneri** (Müll. Arg.) Zahlbr. (Timdal 2011)
- confusa** Swinscow & Krog
- corallina** (Eschw.) Müll. Arg. var. **corallina**
- furfuracea** (Pers.) Zahlbr. Syn.: *Lecidea furfuracea*
- glabella** (Nyl.) Gotth. Schneider
- glaucella** (Vainio) Timdal (Timdal 2008)
- halei** (Tuck.) Zahlbr. Syn.: *Pannaria halei*
- isidiotyla** (Vainio) Riddle (Brako 1991)
- kalbii** Brako (Brako 1991)
- labriformis** Timdal (Seavey & Seavey 2014a)
- lacerata** Timdal (Lücking et al. 2011b)
- ochroxantha** (Nyl.) Zahlbr. (Timdal 2008)
- parvifolia** (Pers.) Müll. Arg. var. **parvifolia** Syn.: *Biatora parvifolia*, *Lecidea parvifolia*
- parvifoliella** (Nyl.) Müll. Arg.
- porphyromelaena** (Vainio) Zahlbr. (Timdal 2011)
- rappiana** (Brako) Elix (Timdal 2011)
- santensis** (Tuck.) Swinscow & Krog (Timdal 2008) Syns.: *Bacidia microphyllina* auct., *Lecidea santensis*
- buettneri** (Müll. Arg.) Zahlbr. var. **glauca** (B. de Lesd.) Brako (Harris 1995a) = *P. porphyromelaena*
- buettneri** var. **munda** (Malme) Brako (Brako 1991) = *P. buettneri*
- canoumbrina** (Vainio) Brako Not known from North America; see note under *Bacidia subgranulosa*
- corallina** var. **glaucella** (Vainio) Brako (Brako 1991) = *P. glaucella*
- corallina** var. **ochroxantha** (Nyl.) Brako (Brako 1991) = *P. ochroxantha*
- corallina** var. **rappiana** Brako (Brako 1991) = *P. rappiana*
- corallina** var. **santensis** (Tuck.) Brako = *P. santensis*

parvifolia var. breviuscula (Nyl.) Brako (Brako 1991) = *P. breviuscula*  
subcorallina Zahlbr. = *Catinaria subcorallina*  
subfilamentosa Zahlbr. = *Lecidea subfilamentosa*

#### PHYSALOSPORA Niessl

\*xanthoriae (Wedd.) Sacc. = misidentification for North America

#### PHYSCIA (Schreber) Michaux

**adscendens** (Fr.) H. Olivier  
**aipolia** (Ehrh. ex Humb.) Fűrnr. var. **aipolia**  
**albinea** (Ach.) Nyl.  
**alnophila** (Vainio) Loht., Moberg, Myllys & Tehler (Lohtander et al. 2009)  
**americana** G. Merr.  
**atrostriata** Moberg  
**biziana** (A. Massal.) Zahlbr.  
**caesia** (Hoffm.) Hampe ex Fűrnr.  
**clementei** (Sm.) Lynge  
**convexa** Müll. Arg.  
**crispa** Nyl. Many old records using this name are actually *P. atrostriata*  
**dakotensis** Essl. (Esslinger 2004a)  
**dimidiata** (Arnold) Nyl.  
**dubia** (Hoffm.) Lettau  
**duplicorticata** W. A. Weber & J. W. Thomson  
**erumpens** Moberg (Moberg 1997)  
**halei** J. W. Thomson  
**leptalea** (Ach.) DC.  
**magnussonii** Frey  
**mexicana** B. de Lesd.  
**millegrana** Degel.  
**montana** B. de Lesd.  
**nashii** Moberg (Moberg 1997)  
**neglecta** Moberg (Tucker 2014)  
**neogaea** R. C. Harris  
**phaea** (Tuck.) J. W. Thomson Syn.: *Parmelia phaea*  
**poncinsii** Hue (Harris 1995a)  
**pseudospeciosa** J. W. Thomson  
**pumilior** R. C. Harris  
**solistella** Essl. & Egan (Esslinger & Egan 1996)  
**sorediosa** (Vainio) Lynge  
**stellaris** (L.) Nyl.  
**subalbinea** Nyl. (Lohtander et al. 2009)  
**subtilis** Degel.  
**tenella** (Scop.) DC.  
**tenella** subsp. **marina** (A. Nyl.) D. Hawksw.  
**tenellula** Moberg (Moberg 1997)  
**tribacia** (Ach.) Nyl.  
**undulata** Moberg (Harris 1995a)  
**villosula** Moberg (Tucker 2014)  
adglutinata (Flörke) Nyl. = *Hyperphyscia adglutinata*  
adiastola Essl. = *Phaeophyscia adiaastola*  
aegialita (Afzel. ex Ach.) B. J. Moore = *Dirinaria aegialita*  
aipolia var. alnophila (Vainio) Lynge = *P. alnophila*  
alba (Fée) Müll. Arg. = misidentification for North America  
alba var. obsessa (Mont.) J. W. Thomson = *P. integrata* Nyl., but a misidentification for North America  
albicans sensu J. W. Thomson = *P. atrostriata* for North American reports  
albicans (Pers.) J. W. Thomson = *Heterodermia albicans*



aquila (Ach.) Nyl. var. detonsa (Fr.) Tuck. (Claassen 1912) = *Anaptychia palmulata*  
 aspera H. Magn. = *Dirinaria aegialita*  
 astroidea (Clem.) Nyl. = *P. clementei*  
 cainii Räsänen = *P. aipolia*  
 callosa sensu Thomson (1963) = *P. tribacia* (Moberg 1997)  
 callosa Nyl. = *P. phaea*  
 cascadiensis H. Magn. = *P. phaea* (Moberg 1997)  
 cernohorskyi Nádv. = *Phaeophyscia cernohorskyi*  
 chloantha (Ach.) Vainio = *Physciella chloantha*  
 ciliata (Hoffm.) Du Rietz = *Phaeophyscia ciliata*  
 columbiana B. de Lesd. = (?) *Phaeophyscia endococcina*, but the type not seen  
 comosa (Eschw.) Nyl. = *Heterodermia comosa*  
 constipata Norrlin & Nyl. = *Phaeophyscia constipata*  
 convexella Moberg (Moberg 1997, in map) Erroneous report for the United States (Moberg 2002)  
 culbersonii Thoms. (nomen nudum) = *Phaeophyscia squarrosa*  
 detera (Nyl.) Nyl. = *Physconia detera*  
 elaeina (Sm.) A. L. Sm. = *Hyperphyscia adglutinata*  
 endochrysea (Hampe) Nyl. = *Phaeophyscia rubropulchra*  
 endococcina (Körber) Th. Fr. = *Phaeophyscia endococcina*  
 endococcinodes Poelt = *Phaeophyscia endococcinodes*  
 fragileszens Zahlbr. = *P. soresdiosa*  
 frostii (Tuck.) Zahlbr. = *Dirinaria frostii*  
 grisea (Lam.) Zahlbr. = *Physconia grisea*, but a misidentification for North America  
 hirsuta Mereschk. = *Phaeophyscia hirsuta*  
 hispida auct. = *P. tenella*  
 hispidula (Ach.) Frey = *Phaeophyscia hispidula*  
 hypoleuca (Ach.) Tuck. = *Heterodermia hypoleuca*  
 intermedia Vainio = *P. dubia*  
 imbricata Vainio = *Phaeophyscia hispidula*  
 isidiigera (Zahlbr.) Fink = *Physconia isidiigera*  
 kairamoi Vainio = *Phaeophyscia kairamoi*  
 lacinulata Müll. Arg. = *Phaeophyscia squarrosa*, for North American records  
 leana (Tuck.) Tuck. = *Phaeophyscia leana*  
 leucoleiptes (Tuck.) Lettau = *Physconia leucoleiptes*  
 lithotea "(Ach.) Nyl." = *Phaeophyscia sciastra*  
 lithotodes Nyl. = *Phaeophyscia endococcina*  
 luganensis Mereschk. = *Physciella chloantha*  
 melanchra Hue = *Physciella melanchra*  
 melops Dufour = *P. phaea*  
 minor (Fée) Vainio = *Hyperphyscia minor*  
 muscigena (Ach.) Nyl. = *Physconia muscigena*  
 nepalensis Poelt = *Physciella nepalensis*  
 nigricans (Flörke) Stizenb. = *Phaeophyscia nigricans*  
 obscura auct. = *Phaeophyscia ciliata*  
 obscura var. endochrysea (Hampe) Nyl. (Claassen 1912) North American reports are *Phaeophyscia rubropulchra*  
 obsessa (Mont.) Nyl. = *P. integrata*, but a misidentification for North America  
 orbicularis (Necker) Poetsch = *Phaeophyscia orbicularis*  
 orbicularis f. rubropulchra Degel. = *Phaeophyscia rubropulchra*  
 picta (Sw.) Nyl. = *Dirinaria picta*  
 pulverulenta auct. non (Schreber) Fűrnr. = *Physconia distorta*, but a misidentification for North America  
 pusilloides Zahlbr. = *Phaeophyscia pusilloides*  
 purpurascens Vainio = *Dirinaria purpurascens*  
 rubropulchra (Degel.) Moberg = *Phaeophyscia rubropulchra*  
 sciastra (Ach.) Du Rietz = *Phaeophyscia sciastra*  
 semipinnata (J. F. Gmelin) Moberg = *P. leptalea*

setosa (Ach.) Nyl. = *Phaeophyscia hispidula*  
 speciosa (Wulfen) Nyl. = *Heterodermia speciosa*  
 subobscura Nyl. = *P. tenella* subsp. *marina*  
 syncolla Tuck. ex Nyl. = *Hyperphyscia syncolla*  
 teretiuscula (Ach.) Lynge = *P. dubia*  
 tribacoides auct. non Nyl. = *P. americana*  
 venusta (Ach.) Nyl. = *Physconia venusta*, but a misidentification for North America  
 virella (Ach.) Flagey (Fink 1935) = *Phaeophyscia orbicularis*  
 wainioi Räsänen = *P. subalbinea*  
 wrightii Tuck. = North American report is *Heterodermia diademata* (Esslinger & Tucker 2009)

#### **PHYSCIELLA** Essl.

**chloantha** (Ach.) Essl. Syn.: *Physcia chloantha*, *P. luganensis*, *Phaeophyscia chloantha*  
**melanchra** (Hue) Essl. Syn.: *Physcia melanchra*, *Phaeophyscia melanchra*  
**nepalensis** (Poelt) Essl. Syn.: *Physcia nepalensis*, *Phaeophyscia nepalensis*

#### **PHYSCIOPSIS** M. Choisy = **HYPERPHYSCIA**

adglutinata (Flörke) M. Choisy = *Hyperphyscia adglutinata*  
 elaeina (Sm.) Poelt = *Hyperphyscia adglutinata*  
 minor (Fée) B. J. Moore = *Hyperphyscia minor*  
 syncolla (Tuck. ex Nyl.) Poelt = *Hyperphyscia syncolla*

#### **PHYSCONIA** Poelt

**americana** Essl. (Esslinger 1994)  
**californica** Essl. (Esslinger 2000b)  
**detersa** (Nyl.) Poelt Syn.: *Physcia detersa*  
**elegantula** Essl.  
**enteroxantha** (Nyl.) Poelt  
**fallax** Essl. (Esslinger 2000b)  
**grumosa** Kashiw. & Poelt (Esslinger & Dillman 2010)  
**isidiigera** (Zahlbr.) Essl.  
**isidiomuscigena** Essl. (Esslinger 2000b)  
**leucoleiptes** (Tuck.) Essl. Syn.: *Physcia leucoleiptes*  
**muscigena** (Ach.) Poelt Syn.: *Physcia muscigena*  
**perisidiosa** (Erichsen) Moberg  
**subpallida** Essl.  
 distorta (With.) J. R. Laundon = misidentification for North America  
 farrea sensu Poelt = *P. perisidiosa* [*Parmelia farrea* Ach. = *Physconia grisea*]  
 grisea (Lam.) Poelt = misidentification for North America  
 kurokawae Kashiw. = *P. leucoleiptes* (Esslinger 2002d)  
 pulverulacea Moberg = *P. distorta*, but a misidentification for North America  
 pulverulenta auct. non (Schreber) Poelt = *P. distorta*, but a misidentification for North America  
 thomsonii Essl. = *Anaptychia elbursiana*

#### **PHYSMA** A. Massal.

**byrsaeum** (Ach.) Müll. Arg. ("byrsinum")  
**cataractaecola** B. de Lesd.  
 luridum (Mont.) Tuck. = *Pannaria lurida*

#### **PHYTOCONIS** Bory

ericetorum (Pers. : Fr.) Redhead & Kuyper = *Lichenomphalia umbellifera*  
 luteovitellina (Pilát & Nannf.) Redhead & Kuyper = *Lichenomphalia alpina*  
 velutina (Quélet) Redhead & Kuyper = *Lichenomphalia velutina*  
 viridis (Ach.) Redhead & Kuyper = *Lichenomphalia hudsoniana*



**PICCOLIA** A. Massal. (Hafellner 1995)

**conspersa** (Fée) Vainio Syn.: *Biatorella conspersa*, *Heterothecium conspersum* (Hafellner 1995)

**nannaria** (Tuck.) Lendemer & Beeching Syns.: *Biatorella nannaria*, *Heterothecium nannarium* (Knudsen & Lendemer 2007)

**ochrophora** (Nyl.) Hafellner Syn.: *Biatorella ochrophora*, *Lecidea ochrophora*, *Strangospora ochrophora* (Hafellner 2004d)

**PILOPHORUS** Th. Fr.

**acicularis** (Ach.) Th. Fr.

**cereolus** (Ach.) Th. Fr. in Hellbom

**clavatus** Th. Fr. Syn.: *P. hallii*

**dovreensis** (Nyl.) Timdal, Hertel & Rambold Syn.: *Lecidea pallida*

**fibula** (Tuck.) Th. Fr.

**nigricaulis** M. Satô

**robustus** Th. Fr.

**vegae** Krog

*hallii* (Tuck.) Vainio = *P. clavatus*

*pallidus* (Th. Fr.) Timdal = *P. dovrensis*

**PLACIDIOPSIS** Beltr.

**cinerascens** (Nyl.) Breuss

**minor** R. C. Harris

**pseudocinerea** Breuss

*cervinula* (Nyl.) Vainio = misidentification for North America

**PLACIDIUM** A. Massal. (Breuss 1996)

**acarosporoides** (Zahlbr.) Breuss (Breuss & Bratt 2000) Syns.: *Catapyrenium acarosporoides*, *Dermatocarpon acarosporoides*, *D. novomexicanum*, *Endopyrenium bajadanae*, *E. novomexicanum*, *Heteroplacidium acarosporoides*

**andicola** (Breuss) Breuss Syn.: *Catapyrenium andicolum*

**arboreum** (Schwein. ex E. Michener) Lendemer Syns.: *Catapyrenium tuckermanii*, *Dermatocarpon tuckermanii*, *Dermatocarpon arboretum*, *Endocarpon arboretum*, *E. tuckermanii*, *Endopyrenium tuckermanii* (Lendemer & Yahr 2004)

**californicum** Breuss (Breuss & Bratt 2000)

**chilense** (Räsänen) Breuss Syn.: *Catapyrenium chilense*

**fangens** (Breuss) Breuss (Breuss 2002d)

**imbecillum** (Breuss) Breuss (McCune & Rosentreter 2007)

**lachneum** (Ach.) B. de Lesd. Syn.: *Catapyrenium lachneum*

**melchii** A. Massal. Syns.: *Catapyrenium melchii*, *Dermatocarpon melchii*

**norvegicum** (Breuss) Breuss Syn.: *Catapyrenium norvegicum*

**pilosellum** (Breuss) Breuss (Nash et al. 1998)

**podolepis** (Breuss) M. Prieto (Prieto et al. 2012) Syns.: *Catapyrenium podolepis*, *Heteroplacidium podolepis*

**rufescens** (Ach.) A. Massal. Syns.: *Catapyrenium rufescens*, *Dermatocarpon rufescens*

**squamulosum** (Ach.) Breuss Syns.: *Catapyrenium squamulosum*, *Dermatocarpon hepaticum* auct. non (Ach.) Th. Fr.

*lacinulatum* (Ach.) Breuss = *Clavascidium lacinulatum*

*lacinulatum* var. *atrans* Breuss (Lendemer 2004c) = *Clavascidium lacinulatum* var. *atrans*

*lacinulatum* var. *erythrostratum* Breuss (Breuss 2000) = *Clavascidium lacinulatum* var. *erythrostratum*

*tuckermanii* (Ravenel ex Mont.) Breuss = *P. arboreum*

*umbrinum* (Breuss) Prieto & Breuss (Gueidan et al. 2009) = *Clavascidium umbrinum*

**PLACOCARPUS** Trevisan

<sup>#</sup>**americanus** K. Knudsen, Breuss, & Kocourk. (Knudsen et al. 2009)

*schaereri* (Fr.) Breuss = misidentification for North America (McCune et al. 2014b)

**PLACODIUM** F. H. Wigg.

*aurantiacum* (Lightf.) Hepp (Claassen 1912) = *Gyalolechia flavorubescens*  
*bolacina* Tuck. = *Polycauliona bolacina*  
*cerinum* (Hedw.) Nägeli ex Hepp (Claassen 1912) = *Caloplaca cerina*  
*cinnabarinum* (Ach.) Nyl. = *Caloplaca cinnabarina*  
*cladodes* Tuck. = *Pachypeltis cladodes*  
*coralloides* Tuck. = *Polycauliona coralloides*  
*elegans* (Link) DC = *Rusavskia elegans*  
*elegans* var. *trachyphyllum* Tuck. = *Xanthomendoza trachyphylla*  
*ferrugineum* (Hudson) Hepp = *Blastenia ferruginea*  
*ferrugineum* f. *bolanderi* Tuck. = *Polycauliona luteominia* var. *bolanderi*  
*fulgens* (Sw.) DC. = *Gyalolechia fulgens*  
*galactophylla* Tuck. = *Squamulea galactophylla*  
*microphyllum* Tuck. = *Caloplaca microphyllina*  
*peliophyllum* Tuck. = *Caloplaca peliophylla*  
*pyraceum* (Ach.) Fink (Claassen 1917) = *Athallia pyracea*  
*vitellinum* (Hoffm.) Hepp (Claassen 1912) = *Candelariella vitellina*

**PLACOMARONEA** Räsänen

**mendozae** (Räsänen) M. Westberg (Westberg 2004a)

**PLACOPSIS** (Nyl.) Lindsay

**cribellans** (Nyl.) Räsänen  
**fusculoides** D. J. Galloway (Galloway 2005)  
**gelida** (L.) Lindsay Syn.: *Lecanora gelida*  
**lambii** Hertel & V. Wirth (Moberg & Carlin 1996; Brodo et al. 2001)  
**roseonigra** Brodo  
*effusa* I. M. Lamb = misidentification for North America

**PLACOPYRENIUM** Breuss

**bucekii** (Nádv. & Servít) Breuss (Breuss 2009)  
**caeruleopulvinum** (J.W. Thomson) Breuss (Breuss 2002e) Syn.: *Catapyrenium caeruleopulvinum*  
**canellum** (Nyl.) Gueidan & Cl. Roux Syn.: *Verrucaria canella* (Navarro-Rosínes et al. 2007)  
**coloradoense** Breuss Syn.: *Catapyrenium schaeferi* sensu Thomson (Breuss 2009)  
**conforme** Breuss (Breuss 2009)  
**fuscillum** (Turner) Gueidan & Cl. Roux Syn.: *Verrucaria fuscilla* (Navarro-Rosínes et al. 2007)  
**heppioides** (Zahlbr.) Breuss Syn.: *Catapyrenium heppioides*, *Dermatocarpon heppioides* (Breuss 2002e)  
**lecideoides** (A. Massal.) Gueidan & Cl. roux Syn.: *Dermatocarpon lecideoides*, *Verrucaria lecideoides* (Navarro-Rosínes et al. 2007)  
**#noxium** Breuss (Breuss 1998)  
**stanfordii** (Herre) K. Knudsen Syns.: *Catapyrenium zahlbruckneri*, *Dermatocarpon zahlbruckneri*, *Verrucaria stanfordii* (Knudsen & Lendemer 2006)  
*zahlbruckneri* (Hasse) Breuss (Breuss 2002e) = *P. stanfordii*

**PLACYNTHIELLA** Elenkin

**dasaea** (Stirton) Tønsberg (Tønsberg 1997 [1998])  
**hyporhoda** (Th. Fr.) Coppins & P. James Syn.: *Saccomorpha hyporhoda*  
**icmalea** (Ach.) Coppins & P. James Syn.: *Saccomorpha icmalea*  
**knudsenii** Lendemer (Lendemer 2004d)  
**oligotropha** (J. R. Laundon) Coppins & P. James Syns.: *Saccomorpha oligotropha*, *Lecidea oligotropha*  
**uliginosa** (Schrader) Coppins & P. James Syns.: *Saccomorpha uliginosa*, *Lecidea uliginosa*, *L. humosa*

**PLACYNTHIUM** (Ach.) Gray

**asperellum** (Ach.) Trevisan  
**flabellum** (Tuck.) Zahlbr.  
**nigrum** (Hudson) Gray Syn.: *Pannaria nigra*



**pannariellum** (Nyl.) H. Magn. (Spribillle et al. 2010)  
**petersii** (Nyl.) Burnham Syn.: *Pannaria petersii*, *Pterygium petersii*  
**stenophyllum** (Tuck.) Fink var **stenophyllum** Syn.: *Pannaria stenophylla*  
**stenophyllum** var. **isidiatum** Henssen  
**subradiatum** (Nyl.) Arnold  
**tantaleum** (Hepp) Hue  
 aspratile (Ach.) Henssen = *P. asperellum*  
 dubium Herre = *Massalongia microphylliza*  
 microphyllizum (Nyl. ex Hasse) Hasse = *Massalongia microphylliza*  
 pannariellum (Nyl.) H. Magn. Reported from Greenland and Iceland but not the U. S. or Canada as yet  
 rosulans (Th. Fr.) Zahlbr. Reported from Greenland but not the U. S. or Canada as yet  
 subnigrum B. de Lesd = *Peccania subnigra*

#### PLAGIOCARPA R. C. Harris = LITHOTHELIUM

hyalospora (Nyl.) R. C. Harris = *Lithothelium hyalosporum*  
 illota (Nyl.) R. C. Harris = *Lithothelium illotum*  
 langloisii R. C. Harris = *Lithothelium illotum*  
 macrospora R. C. Harris = *Lithothelium macrosporum*  
 phaeospora R. C. Harris = *Lithothelium phaeosporum*  
 septemseptata R. C. Harris = *Lithothelium septemseptatum*

#### PLATISMATIA W. L. Culb. & C. F. Culb.

**glauca** (L.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria glauca*  
**herrei** (Imshaug) W. L. Culb. & C. F. Culb. Syn.: *Cetraria herrei*, *C. tuckermanii* Herre non Oakes  
**lacunosa** (Ach.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria lacunosa*  
**norvegica** (Lynge) W. L. Culb. & C. F. Culb. Syn.: *Cetraria norvegica*  
**stenophylla** (Tuck.) W. L. Culb. & C. F. Culb. Syn.: *Cetraria stenophylla*  
**tuckermanii** (Oakes) W. L. Culb. & C. F. Culb. Syn.: *Cetraria atlantica*, *C. lacunosa* var. *atlantica*, *C. tuckermanii* Oakes non Herre  
**wheeleri** Goward, Altermann & Björk (Lumbsch et al. 2011)

#### PLATYGRAMME Fée

**caesiopruinosa** (Fée) Fée Syn.: *Phaeographina caesiopruinosa*, *P. plurifera* (Staiger 2002)  
**coccinea** F. Seavey & J. Seavey (Seavey & Seavey 2014a)  
**pachnodes** (Fée) E. Tripp & Lendemer (Tripp & Lendemer 2010, Lücking et al. 2011b)  
**praestans** (Müll. Arg.) Staiger (Tripp & Lendemer 2010, Lücking et al. 2011b)

#### PLATYGRAPHA Nyl.

californica (Tuck.) Nyl. = *Sigridea californica*  
 hypothallina Zahlbr. = *Lecanographa hypothallina*  
 ocellata Nyl. = *Mazosia ocellata*  
 plurilocularis Zahlbr. = *Paraschismatomma ochroleucum* (Ertz & Tehler 2011)  
 ravenelii Tuck. = *Opegrapha ravenelii*  
 subattingens Nyl. = *Lecanactis epileuca*

#### PLATYGRAPHOPSIS Müll. Arg.

**interrupta** (Fée) Müll. Arg.

#### PLATYTHECIUM Staiger

**colliculosum** (Mont.) Hale Syn.: *Graphina colliculosa* (Tripp et al. 2010)  
**floridanum** (Tuck.) Lendemer Syn.: *Graphis floridana*, *Graphina floridana* (Lendemer & Knudsen 2008)  
**grammitis** (Fée) Staiger (Staiger 2002)

#### PLECTOCARPON Fée

**\*cladoniae** R. Sant. (Ertz et al. 2005)

- \***lambinonii** Diederich & Etayo (Ertz et al. 2005)
- \***lichenum** (Sommerf.) D. Hawksw.
- \***nashii** Hafellner (Hafellner et al. 2002)
- \***nephromeum** (Norman) Sant. (Goward et al. 1996)
- \***peltigerae** Zhurb., Ertz, Diederich & Miądl. (Ertz et al. 2003)
- \***scrobiculatae** Diederich & Etayo (Ertz et al. 2005)
- \***triebeliae** Diederich & Ertz (Ertz et al. 2005)

#### **PLEOPSISIDIUM** Körber

- chlorophanum** (Wahlenb.) Zopf Syns.: *Acarospora chlorophana*, *A. erythrophora*, *A. texana*, *A. weldensis*
- flavum** (Bellardi) Körber Syns.: *Acarospora flava*, *A. oxytona*
- oxytonum* (Ach.) Rabenh. = *P. flavum*
- stenosporum* (Stizenb. ex Hasse) K. Knudsen (Knudsen 2011c) = *P. flavum* (Knudsen & Kocourková 2013)

#### **PLEUROTHELIOPSIS** Zahlbr. = **PYRENULA**

- australiensis* (Müll. Arg.) Zahlbr. = *Anthracothecium australiensis*
- nana* Zahlbr. = *Anthracothecium australiensis*

#### **PLEUROTREMA** Müll. Arg. = **LITHOTHELIUM**

- anacardii* (Vainio) R. C. Harris nom. inval. = *Anisomeridium terminatum*
- inspersum* Müll. Arg. = *Anisomeridium americanum*, not present in North America? (Harris 1995)
- solivagum* Degel. = *Lithothelium hyalospora*

#### **POELTINULA** Hafellner

- cerebrina** (DC.) Hafellner

#### **POLYBLASTIA** A. Massal.

- albida** Arnold (Thomson 1997)
- amota** Arnold (McCune et al. 2014b)
- bryophila** Lönnr.
- cucurbitula** J. W. Thomson & B. M. Murray
- cupularis** A. Massal. Syn.: *Verrucaria intercedens*
- epigaea** A. Massal.
- exalbida** (Nyl.) Zahlbr. (Dillman et al. 2012)
- gothica** Th. Fr.
- hyperborea** Th. Fr.
- hyperborea** var. **macrospora** Lynge
- obsoleta** Arnold
- quartzina** Lynge (Spribille et al. 2010)
- sendtneri** Kremp.
- septentrionalis** Lynge
- theleodes** (Sommerf.) Th. Fr.
- cruenta* (Körber) P. James & Swinscow = *Sporodictyon cruentum*
- gelatinosa* (Ach.) Th. Fr. = *Agonimia gelatinosa*
- henscheliana* (Körber) Lönnr. (Fink 1935) = *Sporodictyon cruentum* (Vitikainen et al. 1997)
- integrascens* (Nyl.) Vainio = *P. hyperborea*
- intercedens* (Nyl.) Lönnr. = *P. cupularis*
- melaspora* (Taylor) Zahlbr. = *Henrica melaspora* (Savić & Tibell 2008)
- sommerfeltii* Lynge = *Sporodictyon terrestre*
- terrestris* Th. Fr. = *Sporodictyon terrestre*
- tristicula* (Nyl.) Arnold = *Agonimia tristicula*

#### **POLYBLASTIOPSIS** Zahlbr. = **JULELLA**

- dealbens* Fink = *Polymeridium proponens*



+dispora (Müll. Arg.) Zahlbr. = Julella dispora  
 +fallaciosa (Stizenb. ex Arnold) Zahlbr. = Julella fallaciosa  
 fallax (Nyl.) Fink = Arthopyrenia analepta  
 floridana Fink = Porina nuculastrum  
 inductula (Nyl.) Fink = Thelenella inductula  
 intrusa (Nyl.) Zahlbr. = a Laurera sp., not in North America  
 +lactea (A. Massal.) Zahlbr. = Julella lactea  
 +quercicola Brodo = Julella fallaciosa  
 +rappii Zahlbr. = Julella geminella  
 +sublactea (Nyl.) Zahlbr. = Julella sublactaea

#### **POLYCAULIONA** Hue (Arup et al. 2013)

**ascendens** (S. Y. Kondr.) Frödén, Arup, & Söchting Syn.: Xanthoria ascendens  
**bolacina** (Tuck.) Arup, Frödén & Söchting Syn.: Caloplaca bolacina, Placodium bolacinum  
**brattiae** (W. A. Weber) Arup, Frödén & Söchting Syn.: Caloplaca brattiae  
**candelaria** (L.) Frödén, Arup, & Söchting Syn.: Teloschistes candelarius, Xanthoria candelaria  
**coralloides** (Tuck.) Hue Syn.: Caloplaca coralloides, Placodium coralloides  
**flavogranulosa** (Arup) Arup, Frödén & Söchting Syn.: Caloplaca flavogranulosa  
**ignea** (Arup) Arup, Frödén & Söchting Syn.: Caloplaca ignea  
**impolita** (Arup) Arup, Frödén & Söchting Syn.: Caloplaca impolita  
**inconspecta** (Arup) Arup, Frödén & Söchting Syn.: Caloplaca inconspecta  
**ludificans** (Arup) Arup, Frödén & Söchting Syn.: Caloplaca ludificans  
**luteominia** (Tuck.) Arup, Frödén & Söchting var. **luteominia** Syn.: Blastenia luteominia, Caloplaca laeta, C. luteominia, Placodium luteominium  
**luteominia** var. **bolanderi** (Tuck.) Arup, Frödén & Söchting Syn.: Caloplaca bolanderi, Placodium ferrugineum f. bolanderi  
**nashii** (Nav.-Ros., Gaya & Hladún) Arup, Frödén & Söchting Syn.: Caloplaca nashii  
**phlogina** (Ach.) Arup, Frödén & Söchting Syn.: Caloplaca phlogina  
**pollinarioides** (L. Lindblom & D.M. Wright) Frödén, Arup, & Söchting Syn.: Xanthoria pollinarioides  
**polycarpa** (Hoffm.) Frödén, Arup, & Söchting Syn.: Teloschistes polycarpus T. ramulosus, Xanthoria polycarpa, X. ramulosa  
**rosei** (Hasse) Arup, Frödén & Söchting Syn.: Caloplaca rosei  
**stellata** (Wetmore & Kärnefelt) Arup, Frödén & Söchting Syn.: Caloplaca stellata  
**tenax** (L. Lindblom) Frödén, Arup, & Söchting Syn.: Xanthoria tenax  
**tenuiloba** (L. Lindblom) Frödén, Arup, & Söchting Syn.: Xanthoria tenuiloba  
**verruculifera** (Vainio) Arup, Frödén & Söchting Syn.: Caloplaca gloriae sensu Aprot, C. verruculifera

#### **POLYCHIDIUM** (Ach.) Gray

**muscicola** (Sw.) Gray Syn.: Leptogium muscicola  
 albociliatum (Desm.) Zahlbr. = Leptochidium albociliatum  
 contortum Henssen = Leptogidium contortum (Muggia et al. 2011)  
 dendriscum (Nyl.) Henssen = Leptogidium dendriscum (Muggia et al. 2011)  
 intricatulum (Nyl.) Henssen = Dendriscocaulon intricatulum  
 rivale (Tuck.) Fink = Scytinium rivale  
 umhausense (Auersw.) Henssen = Dendriscocaulon umhausense

#### **POLYCOCCUM** Sauter ex Körber

\***clauzadei** Nav.-Ros. & Cl. Roux (Hafellner et al. 2002)  
 \***hymeniicola** (Berk. & Broome) Zhurb. (Spribille et al. 2010, Zhurbenko & Dillman 2010)  
 \***kernerii** J. Steiner (Hafellner et al. 2002)  
 \***laursenii** Zhurb. (Zhurbenko & Alstrup 2004)  
 \***microsticticum** (Leighton ex Mudd) Arnold  
 \***minutulum** Kocourková & F. Berger (Diederich 2003)  
 \***opulentum** (Th. Fr. & Almq.) Arnold (Hafellner et al. 2002)  
 \***peltigerae** (Fuckel) Vězda (Alstrup 2004)  
 \***pulvinatum** (Eitner) R. Sant.

- \***sporastatae** (Anzi) Arnold
- \***squamarioides** (Mudd) Arnold
- \***trypethelioides** (Th. Fr.) R. Sant. (Diederich 2003)
- \***vermicularium** (Lindsay) D. Hawksw. (Esslinger & Egan 1995)
- \***bryonthae** (Arnold) Vězda (Zhurbenko 2009a) = *Didymocyrtis bryonthae* (Ertz et al. 2015a)
- \***epicrassum** (H. Olivier) R. Sant. = *Clypeococcum epicrassum*, but see note there
- \***galligenum** Vězda = *P. pulvinatum*
- \***gelidarium** (Mudd) D. Hawksw. = *Roselliniopsis gelidaria*

#### **POLYDESMIA** Boud.

- \***lichenis** Huhtinen & R. Sant. (Spribille et al. 2010)

#### **POLYMERIDIUM** (Müll. Arg.) R. C. Harris

- albidum** (Müll. Arg.) R. C. Harris
- albocinereum** (Kremp.) R. C. Harris
- catapastum** (Nyl.) R. C. Harris
- contendens** (Nyl.) R. C. Harris
- proponens** (Nyl.) R. C. Harris Syns.: *Campylothelium amylosporum*, *Polyblastiopsis dealbens*
- quinqueseptatum** (Nyl.) R. C. Harris Syn.: *Arthopyrenia quinqueseptata*, *Pyrenula quinqueseptata*
- subcinereum** (Nyl.) R. C. Harris Syn.: *Porina subcinerea*
- pleiomerellum** (Müll. Arg.) R. C. Harris = *P. albocinereum*

#### **POLYPYRENULA** D. Hawksw.

- sexlocularis* (Müll. Arg.) D. Hawksw. Syn.: *Polythelis sexlocularis*. The implied occurrence of this species in Florida is questionable. No material seen from North America

#### **POLYSPORINA** Vězda

- \***arenacea** (H. Magn.) K. Knudsen & Kocourk. Syn.: *Acarospora arenacea* (Knudsen & Kocourková 2008a)
- cyclocarpa** (Anzi) Vězda (Knudsen et al. 2011b)
- gyrocarpa** (H. Magn.) N. S. Golubk. Syns.: *Sarcogyne oligospora*, *S. gyrocarpa* (Knudsen & Kocourková 2009c)
- \***pusilla** (Anzi) M. Steiner ex Kantvilas (Knudsen & Kocourková 2008a)
- simplex** (Taylor) Vězda Syns.: *Biatorrella revertens*, *B. simplex*, *Lecanora privigna*, *Sarcogyne simplex*
- \***subfuscescens** (Nyl.) K. Knudsen & Kocourk. Syns.: *Acarospora subfuscescens*, *Sarcogyne bicolor* (Knudsen & Kocourková 2008a)
- urceolata** (Anzi) Brodo
- lapponica* (Ach. ex Schaerer) Degel. = *Sarcogyne lapponica* (see note there)
- \**lapponica* auct. N.A. = *Polysporina subfuscescens*
- oligospora* (H. Magn.) K. Knudsen (Knudsen & Lendemer 2005a) = *P. gyrocarpa*

#### **POLYTHELIS** Clem. = **POLYPYRENULA**

- sexlocularis* (Müll. Arg.) Clem. = *Polypyrenula sexlocularis* (q.v.)

#### **PORINA** Müll. Arg.

- amygdalina** Müll. Arg.
- heterospora** (Fink ex J. Hedrick) R. C. Harris
- linearis** (Leighton) Zahlbr. (Nash 2002) Syns.: *Pseudosagedia linearis*, *Trichothelium lineare*
- norrlinii** Vainio (Fryday 2010)
- nucula** Ach.
- nuculastrum** (Müll. Arg.) R. C. Harris Syns.: *Clathroporina nuculastrum*, *C. confinis*, *Polyblastiopsis floridana* (Harris 1995a)
- pacifica** Brodo (Brodo 2004)
- peregrina** Tretiach & McCarthy (Aptroot 2002e)
- radicicola** P. M. McCarthy & Tønsberg (McCarthy & Tønsberg 1998)
- salicina** Müll. Arg.



**scabrida** R. C. Harris (Harris 1995a)  
aenea (Wallr.) Zahlbr. = Pseudosagedia aeneum  
carpineae (Pers. ex Ach.) Zahlbr. = Pseudosagedia aeneum  
cestrensis (Tuck. ex E. Michener) Müll. Arg. = Pseudosagedia cestrensis  
chlorotica (Ach.) Müll. Arg. = Pseudosagedia chlorotica  
cinerea "(Pers.) Zahlbr." = nom. illeg. = Strigula stigmatella  
faginea (Schaerer) Arnold = Strigula stigmatella  
guentheri (Flotow) Zahlbr. = Pseudosagedia guentheri  
hibernica P. James & Swinscow = misidentification for North America (Harris 1995a)  
lectissima (Fr.) Zahlbr. = Segrestia lectissima  
leptalea (Durieu & Mont.) A. L. Sm. = Segestria leptalea  
linearis (Leighton) Zahlbr. = Pseudosagedia linearis  
mammillosa (Th. Fr.) Vainio = Segestria mammillosa  
mastoidea (Ach.) Müll. Arg. = misidentification for North America (Harris 1995a)  
nitidula Müll. Arg. = Pseudosagedia nitidulum  
nucula var. heterospora Fink = Porina heterospora  
olivacea (Pers.) A. L. Sm. = misidentification for North America  
plumbaria (Stizenb.) Hasse = Arthopyrenia plumbaria  
pulla (Ach.) Müll. Arg. = an Arthopyrenia sp., not in North America  
rhapidosperma Müll. Arg. = Pseudosagedia rhapidosperma  
subcinerea (Nyl.) Zahlbr. = Polymeridium subcinereum  
thaxteri R. Sant. = Pseudosagedia thaxteri  
viridiseda (Nyl.) Zahlbr. = Strigula viridiseda

#### **POROCYPHUS** Körber

**coccodes** (Flotow) Körber Syn.: *P. furfurellus*  
**kenmorensis** (Holl ex Nyl.) Henssen  
dispersus E. Dahl = *Thelignya lignyota*  
furfurellus (Nyl.) Forssell = *P. coccodes*

#### **PORPIDIA** Körber

**albocaerulescens** (Wulfen) Hertel & Knoph Syn.: *Huilia albocaerulescens*, *Lecidea albocaerulescens*, *L. hebescens*  
**albocaerulescens** (Wulfen) Hertel & Knoph var. **polycarpiza** (Vainio) Rambold & Hertel (Rambold 1989)  
**calcareae** Gowan  
**carlottiana** Gowan  
**cinereoatra** (Ach.) Hertel & Knoph Syn.: *Huilia cinereoatra*, *Lecidea cinereoatra*  
**contraponenda** (Arnold) Knoph & Hertel  
**crustulata** (Ach.) Hertel & Knoph Syn.: *Huilia crustulata*, *Lecidea crustulata*  
**degelii** (H. Magn.) Lendemer Syn.: *Lecidea degelii* (Lendemer & Harris 2014c)  
**flavicunda** (Ach.) Gowan Syn.: *Huilia flavocaerulescens*, *Lecidea flavocaerulescens* (Fryday 2005)  
**flavocruenta** Fryday & Buschbom (Fryday 2005)  
**grisea** Gowan  
**lowiana** Gowan  
**macrocarpa** (DC.) Hertel & A. J. Schwab Syn.: *Huilia macrocarpa*, *H. nigrocruenta*, *Lecidea steriza*, *L. macrocarpa*, *L. platycarpa*, *L. phylliscina*, *L. contigua*, *L. soledifera*  
**melinodes** (Körber) Gowan & Ahti Syn.: *Aspicilia melinodes*, *Huilia melinodes*, *Lecidea melinodes*  
**ochrolemma** (Vainio) Brodo & R. Sant. Syn.: *Hymenelia ochrolemma*  
**platycarpoides** (Bagl.) Hertel Syn.: *Huilia platycarpoides*  
**rugosa** (Taylor) Coppins & Fryday Syn.: *Huilia glaucophaea*, *Lecidea glaucophaea* (Fryday 2005)  
**soredizodes** (Lamy ex Nyl.) J. R. Laundon Syn.: *Lecidea soredizodes*, *Huilia soredizodes* (Fryday et al. 2007)  
**speirea** (Ach.) Kremp. Syn.: *Lecidea speirea*  
**subsimplex** (H. Magn.) Fryday (Coppins & Fryday 2006b)  
**superba** (Körber) Hertel & Knoph Syn.: *Huilia superba*

**thomsonii** Gowan

**tuberculosa** (Sm.) Hertel & Knoph Syn.: *Huilia tuberculosa*, *Lecidea solediza*, *L. tumida*

**zeoroides** (Anzi) Knoph & Hertel Syn.: *Lecidea macrocarpa* var. *trullisata*

*diversa* (Lowe) Gowan = *P. contraponenda* (Fryday 2005)

*flavocaerulescens* (Hornem.) Hertel & A. J. Schwab = *P. flavicunda* (Fryday 2005)

*glaucophaea* (Körber) Hertel & Knoph = *P. rugosa* (Fryday 2005)

*herteliana* Gowan = *P. cinereoatra* (Fryday 2005)

*nigrocruenta* (Anzi) Diederich & Sérus. = *P. macrocarpa*

*pseudomelinodes* A. J. Schwab = *Porpidia ochrolemma*

*tahawasiana* Gowan = *P. subsimplex*

#### **PRONECTRIA** Clem.

\***anisospora** (Lowen) Lowen Syn.: *Nectriella anisospora*

\***dillmaniae** Zhurb. (Zhurbenko et al. 2005)

\***erythrinella** (Nyl.) Lowen Syn.: *Nectriella erythrinella*

\***fissuriprodiens** Etayo (Spribille et al. 2010)

\***oligospora** Lowen & Rogerson

\***robergei** (Mont. & Desm.) Lowen (Alstrup & Cole 1998)

\***tibellii** Zhurb. (« *tibellae* ») (Zhurbenko & Alstrup 2004)

\***walkerorum** Zhurb. (Zhurbenko et al. 2005)

#### **PROTOBLASTENIA** (Zahlbr.) J. Steiner

**calva** (Dickson) Zahlbr.

**cyclospora** (Hepp ex Körber) Poelt (Dillman et al. 2012)

**incrustans** (DC.) J. Steiner

**rupestris** (Scop.) J. Steiner

**terricola** (Anzi) Lynge

*cinnabarina* (Sommerf.) Räsänen = *Ramboldia cinnabarina*

*monticola* (Ach.) J. Steiner = *Clauzadea monticola*

*quernea* (Dickson) Clauzade = *Pyrrhospora quernea*

*rupestris* var. *calva* (Dickson) J. Steiner = *P. calva*

*russula* (Ach.) Räsänen = *Ramboldia russula*

#### **PROTOMICAREA** Hafellner (Hafellner & Türk 2001)

**limosa** (Ach.) Hafellner Syn.: *Lecidea limosa*

#### **PROTOPANNARIA** (Gyelnik) P. M. Jørg. & S. Ekman

**pezizoides** (Weber) P. M. Jørg. & S. Ekman (Jørgensen 2000c) Syn: *Pannaria pezizoides*

#### **PROTOPARMELIA** M. Choisy

**atriseda** (Fr.) R. Sant. & V. Wirth Syn.: *Lecanora atriseda*

**badia** (Hoffm.) Hafellner Syn.: *Lecanora badia*, *L. grandis*

**capitata** Lendemer (Lendemer & Lumbsch 2008)

**cupreobadia** (Nyl.) Poelt

**hypotremella** Herk, Spier & V. Wirth (Brodo & Aptroot 2005)

**isidiata** Diederich, Aptroot & Sérus. (Lendemer & Lumbsch 2008)

**nephaea** (Sommerf.) R. Sant. ex Poelt & Obermayer Syn.: *Lecanora nephaea*

**ochrococca** (Nyl.) P. M. Jørg., Rambold & Hertel Syns.: *Lecidea ochrococca*, *Lecanora ochrococca*, *L. phaeobola*

[#ryaniana van den Boom, Sipman & Elix \(van den Boom et al. 2007\) = \*Miriquidica verrucariicola\* \(Knudsen et al. 2015\)](#)

#### **PROTOPARMELIOPSIS** M. Choisy

[#\*\*bipruinosa\*\* \(Fink\) S. Y. Kondr. \(Kondratyuk et al. 2012\) Syn.: \*Lecanora bipruinosa\*](#)

[#\*\*crustacea\*\* \(Savicz\) S. Y. Kondr. \(Kondratyuk et al. 2012\) Syn.: \*Lecanora crustacea\*](#)

[#\*\*dispersoareolata\*\* \(Körber\) S. Y. Kondr. \(Kondratyuk et al. 2012\) Syn.: \*Lecanora dispersoareolata\*](#)



**garovaglii** (Körber) Arup, Zhao Xin & Lumbsch (Zhao et al. 2016) Syns.: *Lecanora cascadiensis*, *L. garovaglii*, *L. nevadensis*  
**geiserae** (B. D. Ryan) S. Y. Kondr. (Kondratyuk et al. 2012) Syn.: *Lecanora geiserae*  
**gyrophorica** (Lendemer) S. Y. Kondr. (Kondratyuk et al. 2013) Syn.: *Lecanora gyrophorica*  
**kofae** (B. D. Ryan & T. H. Nash) (Kondratyuk et al. 2012) Syn.: *Lecanora kofae*  
**laatokkaensis** (Räsänen) Moberg & R. Sant. Syn.: *Lecanora laatokkaensis*  
**mazatzalensis** (B. D. Ryan & T. H. Nash) S. Y. Kondr. (Kondratyuk et al. 2013) Syn.: *Lecanora mazatzalensis*  
**muralis** (Schreber) M. Choisy (Zhao et al. 2016) Syns.: *Lecanora diffracta*, *L. muralis*, *L. saxicola*, *L. versicolor*  
**peltata** (Ramond) Arup, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Rhizoplaca peltata*, *Lecanora peltata*  
**pinguis** (Tuck.) S. Y. Kondr. (Kondratyuk et al. 2013) Syn.: *Lecanora pinguis*

#### **PROTOTHELENELLA** Räsänen

**corrosa** (Körber) H. Mayrhofer & Poelt Syn.: *Microglaena corrosa*  
**\*crocea** (Bagl. & Carestia) Haffelner & H. Mayrhofer (Spribille et al. 2010)  
**leucothelia** (Nyl.) H. Mayrhofer & Poelt (Goward et al. 1996)  
**pluriseptata** Fryday (Fryday 2004a) Syn.: *Gongylia muscorum*  
**\*santessonii** H. Mayrhofer  
**sphinctrinoidella** (Nyl.) H. Mayrhofer & Poelt (Mayrhofer 1987)  
**sphinctrinoides** (Nyl.) H. Mayrhofer & Poelt Syn.: *Microglaena sphinctrinoides*, *Verrucaria pernigrata*

#### **PROTOUNGUICULARIA** Raitv. & R. Galán

**\*nephromatis** (Zhurb. & Zavarzin) Huhtinen, D. Hawksw. & Ihlen (Huhtinen et al. 2008) Syn.: *Unguiculariopsis nephromatis*  
**\*transiens** (Höhn.) Huhtinen (Huhtinen et al. 2008)

#### **PSEUDEPHEBE** M. Choisy

**minuscula** (Nyl. ex Arnold) Brodo & D. Hawksw. Syn.: *Alectoria minuscula*  
**pubescens** (L.) M. Choisy Syns.: *Alectoria pubescens*, *Ephebe pubescens*, *Parmelia lanata*

#### **PSEUDEVERNIA** Zopf

**cladonia** (Tuck.) Hale & W. L. Culb. Syn.: *Parmelia cladonia*  
**consocians** (Vainio) Hale & W. L. Culb.  
**intensa** (Nyl.) Hale & W. L. Culb.  
*furfuracea* (L.) Zopf = misidentification for North America; records are either *P. consocians* or *P. intensa*

#### **PSEUDOCYPHELLARIA** Vainio

**crocata** (L.) Vainio Syn.: *Sticta crocata*  
**hawaiiensis** H. Magn. (Moncada et al. 2014)  
**mallota** (Tuck.) H. Magn. (Tønsberg 1999b)  
**rainierensis** Imshaug  
*anomala* Brodo & Ahti = *Lobaria anomala* (McCune et al. 2014b)  
*anthraspis* (Ach.) H. Magn. = *Lobaria anthraspis* (McCune et al. 2014b)  
*aurata* (Ach.) Vainio = *Crocodia aurata* (Galloway & Elix 2013)  
*mougeotiana* (Delise) Vainio = *P. crocata*  
*perpetua* McCune & Miądl. (Miądlowska et al. 2002) = *P. hawaiiensis* (Moncada et al. 2014)

#### **PSEUDOPARMELIA** Lynge (Elix & Nash 1997)

**cubensis** (Nyl.) Elix & T. H. Nash (Elix & Nash 1997) Syn.: *Parmelia leucochlora* Tuck. non (Mont.) Mont.  
**floridense** Elix & T. H. Nash (Elix & Nash 1997)  
**uleana** (Müll. Arg.) Elix & T. H. Nash (Elix & Nash 1997) Syn.: *Parmelia uleana*, *Parmelia endoxantha*, *Parmelia congruens* auct., *Parmelia sphaerospora* auct.

alabamensis (Hale & McCull.) Hale = Canoparmelia alabamensis  
amazonica (Nyl.) Hale = Canoparmelia amazonica  
baltimorensis (Gyelnik & Fóris) Hale = Flavoparmelia baltimorensis  
caperata (L.) Hale = Flavoparmelia caperata  
caroliniana (Nyl.) Hale = Canoparmelia caroliniana  
crozalsiana (B. de Lesd.) Hale = Canoparmelia crozalsiana  
cryptochlorophaea (Hale) Hale = Canoparmelia cryptochlorophaea  
martinicana (Nyl.) Hale = Canoparmelia martinicana  
rutidota (Hooker f. & Taylor) Hale = Flavoparmelia rutidota  
salacinifera (Hale) Hale = Canoparmelia salacinifera  
sphaerospora (Nyl.) Hale (North American records) = Pseudoparmelia uleana  
texana (Tuck.) Hale = Canoparmelia texana

**PSEUDOPYRENIDIUM** Nav.-Ros., Zhurb. & Cl. Roux

\***tartaricola** (Lindsay) Nav.-Ros., Zhurb. & Cl. Roux (Zhurbenko 2013)

**PSEUDOPYRENULA** Müll. Arg.

**diluta** (Fée) Müll Arg. var. **degenerans** Vainio (Harris 1998)

**subgregaria** Müll. Arg. (Lücking et al. 2011b)

**subnudata** Müll. Arg. (Lücking et al. 2011b)

pupula (Ach.) Müll. Arg. = Trypethelium floridanum for North American records

**PSEUDOSAGEDIA** (Müll. Arg.) M. Choisy (Harris 2005)

**aenea** (Wallr.) Hafellner & Kalb Syn.: Trichothelium aeneum, Porina aenea, P. carpinea

**cestrensis** (Tuck. ex E. Michener) R. C. Harris Syns.: Porina cestrensis, Trichothelium cestrense, Verrucaria cestrensis

**chlorotica** (Ach.) Hafellner & Kalb Syn.: Porina chlorotica, Trichothelium chloroticum

**crocynoides** (R. C. Harris) R. C. Harris Syn.: Trichothelium crocynoides

**guentheri** (Flotow) Hafellner & Kalb Syn.: Porina guentheri, Trichothelium guentheri

**isidiata** (R. C. Harris) R. C. Harris Syn.: Trichothelium isidiatum

**nitidula** (Müll. Arg.) Hafellner & Kalb Syn.: Porina nitidula, Trichothelium nitidulum

**rhaphidosperma** (Müll. Arg.) R. C. Harris Syns.: Porina rhaphidosperma, Trichothelium rhaphidospermum

**thaxteri** (R. Sant.) Hafellner & Kalb Syn.: Porina thaxteri, Trichothelium thaxteri

linearis (Leighton) Hafellner & Kalb = [Porina linearis](#)

**PSEUDOSCHISMATOMMA** Ertz & Tehler (Ertz et al. 2015b)

**rufescens** (Pers.) Ertz & Tehler Syn.: Opegrapha rufescens

**PSIIOLECHIA** A. Massal.

**clavulifera** (Nyl.) Coppins Syn.: Lecidea adirondackii

**lucida** (Ach.) M. Choisy Syn.: Lecidea lucida

**PSORA** Hoffm.

**brunneocarpa** Timdal (Timdal 2002a)

**californica** Timdal

**cerebriformis** W. A. Weber

**crenata** (Taylor) Reinke Syns.: Lecidea crenata, L. coroniformis

**decipiens** (Hedwig) Hoffm. Syns.: Biatora decipiens, Lecidea decipiens

**elenkinii** Rass. (Zhurbenko 2009a)

**globifera** (Ach.) A. Massal. Syn.: Lecidea globifera

**himalayana** (Church. Bab.) Timdal

**hyporubescens** Timdal (Timdal 2002a)

**icterica** (Mont.) Müll. Arg. Syn.: Lecidea icterica

**luridella** (Tuck.) Fink Syn.: Lecidea luridella

**montana** Timdal



**nipponica** (Zahlbr.) Gotth. Schneider Syns.: *Lecidea novomexicana*  
**pacifica** Timdal  
**peninsularis** Timdal (Timdal 2002a)  
**pruinosa** Timdal (Timdal 2002a)  
**pseudorussellii** Timdal  
**rubiformis** (Ach.) Hooker Syn.: *Lecidea rubiformis*  
**russellii** (Tuck.) A. Schneider Syns.: *Lecidea russellii*, *Biatora russellii*  
**tenuifolia** Timdal  
**tuckermanii** R. A. Anderson ex Timdal  
**vallesiaca** (Schaerer) Timdal  
*anthracophila* (Nyl.) Arnold = *Carbonicola anthracophila*  
*demissa* (Rutstr.) Hepp = *Lecidoma demissum*  
*friesii* (Ach.) Hellbom = *Xylopsora friesii*  
*lurida* (Ach.) DC. = *Romjularia lurida*  
*novomexicana* B. de Lesd. = *P. nipponica*  
*ostreata* Hoffm. = *Hypocenomyce scalaris*  
*petri* (Tuck.) Fink = *Romjularia lurida*  
*pulcherrima* (Vainio) Elenkin = *Anamylopsora pulcherrima*  
*rufonigra* (Tuck.) A. Schneider = *Psorula rufonigra*  
*scalaris* (Ach. ex Lilj.) Hooker = *Hypocenomyce scalaris*  
*scholanderi* (Lynge) R. A. Anderson = *Toninia tristis*  
*scotopholis* (Tuck.) Fink (Fink 1935) = *Miriquidica scotopholis*  
*testacea* (Hoffm.) Ach. Syns.: *Lecidea testacea*, *Chrysopsora testacea*, but not present in North American flora.  
*texana* W. A. Weber = *Xanthopsorella texana*

#### **PSORINIA** Gotth. Schneider

**conglomerata** (Ach.) Gotth. Schneider Syn.: *Toninia conglomerata*

#### **PSOROGLAENA** Müll. Arg.

**costaricensis** Henssen (Lücking et al. 2011b)  
**cubensis** Müll. Arg. var. **cubensis**  
**cubensis** var. **teretiloba** O. Eriksson  
**dictyospora** (Orange) H. Harada (Harada 2003) Syn.: *Macentina dictyospora*  
**stigonemoides** (Orange) Henssen (Björk et al. 2009)

#### **PSOROMA** Michaux

**cinnamomeum** Malme (Jørgensen 2000c)  
**hirsutulum** Nyl. (Jørgensen 2005)  
**hypnorum** (Vahl) Gray Syn.: *Pannaria hypnorum*  
**tenue** Henssen var. **boreale** Henssen

#### **PSOROTICHIA** A. Massal.

**hassei** Fink ex J. Hedrick  
**minuta** H. Magn.  
**montinii** (A. Massal.) Forssell (Schultz 2007c)  
**murorum** A. Massal. (Schultz 2007c)  
**nigra** H. Magn.  
**schaereri** (A. Massal.) Arnold Syn.: *Pyrenopsis schaeferi*  
**taurica** (Nyl.) Vainio (Schultz 2007c)  
*numidella* (Nyl.) Forssell var. *flageyana* J. Steiner [Erroneously listed here; reported only from Mexico \(Schulz 2007c\)](#)  
*segregata* (Nyl. ex Hasse) Hasse = *Lempholemma chalazanum*  
*squamulosa* Zahlbr. = *Gloeoheppia squamulosa*

**PSORULA** Gotth. Schneider

**rufonigra** (Tuck.) Gotth. Schneider Syns.: *Biatora rufonigra*, *Lecidea rufonigra*, *L. brouardii*, *Psora rufonigra*  
**scotopholis** (Tuck.) Gotth. Schneider = *Miriquidica scotopholis*

**PTERYGIOPSIS** Vainio

**atra** Vainio  
**canariensis** Henssen (Schultz 2006)  
**cava** M. Schultz (Schultz 2006)  
**neglecta** (Erichsen) M. Schultz & Thüs ined. Syn.: *Forsellia neglecta* (Lewis 2014)

**PTERYGIUM** Nyl.

**petersii** Nyl. (Fink 1935) = *Placynthium petersii*

**PTYCHOGRAPHA** Nyl. (McCune 1997b)

**xylographoides** Nyl. (McCune 1997b)

**PUNCTELIA** Krog

**appalachensis** (W. L. Culb.) Krog Syn.: *Parmelia appalachensis*  
**bolliana** (Müll. Arg.) Krog Syns.: *Parmelia bolliana*, *P. frondifera*  
**borreri** (Sm.) Krog Syns.: *Parmelia borreri*, *P. pseudoborreri*  
**caseana** Lendemer & Hodgkinson (Lendemer & Hodgkinson 2010)  
**eganii** Hodgkinson & Lendemer (Hodgkinson & Lendemer 2011)  
**graminicola** (B. de Lesd.) Egan Syn.: *Parmelia graminicola*, *P. semansiana* (Egan 2003)  
**hypoleucites** (Nyl.) Krog Syn.: *Parmelia hypoleucites*  
**jeckeri** (Roum.) Kalb (Lendemer & Hodgkinson 2010)  
**missouriensis** G. Wilh. & Ladd (Adler 1997, van Herk & Aptroot 2000, Aptroot 2003)  
**nashii** Marcelli & Canêz (Marcelli et al. 2011)  
**perreticulata** (Räsänen) G. Wilh. & Ladd Syn.: *Parmelia perreticulata*  
**punctilla** (Hale) Krog  
**reddenda** (Stirton) Krog Syn.: *Parmelia reddenda*  
**rudecta** (Ach.) Krog Syn.: *Parmelia rudecta*  
**stictica** (Duby) Krog Syn.: *Parmelia stictica*  
**subpraesignis** (Nyl.) Krog Syn.: *Parmelia subpraesignis*  
**darrowi** (J. W. Thomson) Krog = *Flavopunctelia darrowi*  
**flaventior** (Stirton) Krog = *Flavopunctelia flaventior*  
**praesignis** (Nyl.) Krog = *Flavopunctelia praesignis*  
**semansiana** (W. L. Culb. & C. F. Culb.) Krog = *P. graminicola*  
**soredica** (Nyl.) Krog = *Flavopunctelia soredica*  
**subrudecta** (Nyl.) Krog = misidentification for North America (Lendemer & Hodgkinson 2010)  
**ulophylla** (Ach.) van Herk & Aptroot (Tucker et al. 2006) = *P. jeckeri* (Lendemer & Hodgkinson 2010)

**PUTTEA** S. Stenroos & Huhtinen

**caesia** (Fr.) M. Svensson & T. Sprib. (Dillman et al. 2012) Syn.: *Lecidea symmictella*  
**exsequens** (Nyl.) Printzen & Davydov (Buck & Lendemer 2012)  
**margaritella** (Hulting) S. Stenroos & Huhtinen (Spribille et al. 2010)

**PYCNORA** Hafellner (Hafellner & Türk 2001)

**praestabilis** (Nyl.) Hafellner Syn.: *Hypocenomyce praestabilis*  
**sorophora** (Vainio) Hafellner Syn.: *Hypocenomyce sorophora*  
**xanthococca** (Sommerf.) Hafellner Syns.: *Hypocenomyce xanthococca*, *Lecidea xanthococca*  
**leucococca** (R. Sant.) R. Sant. (Santesson et al. 2004) = *Toensbergia leucococca*

**PYCNOTHELIA** Dufour

**papillaria** Dufour Syns.: *Cladonia heteromorpha*, *C. papillaria*  
**cladinoides** Nyl. = *Cladonia caroliniana* (Ahti & Brodo 1981)



**PYRENASTRUM** Eschw. = **PYRENULA**

astroideum (Fée) Eschw. = *Pyrenula astroideum*  
cubanum Müll. Arg. = *Pyrenula cubana*  
fuscum Mont. = *Pyrenula septicollaris*  
pyrenastraeum (Nyl.) Zahlbr. = *Pyrenula septicollaris*

**PYRENIDIUM** Nyl.

\***actinellum** Nyl.  
\***aggregatum** K. Knudsen & Kocourk. (Knudsen & Kocourková 2010g)  
\***hyalosporum** Alstrup, D. Hawksw. & R. Sant.  
\***octosporum** Looman = *Thelenella muscorum* var. *octospora*

**PYRENOCARPON** Trevisan

**thelostomum** (Ach. ex J. Harriman) Coppins & Aptroot (Dillman et al. 2012)

**PYRENOCOLLEMA** Reinke

**atlanticum** (Vainio) R. C. Harris (Harris 1995a)  
**caesium** (Nyl.) R. C. Harris  
**prospersellum** (Nyl.) R. C. Harris Syn.: *Arthopyrenia prospersella*  
**tichothecioides** (Arnold) R. C. Harris Syn.: *Arthopyrenia tichothecioides*  
*elegans* R. Sant. = *Collemopsidium elegans*  
*halodytes* (Nyl.) R. C. Harris = *Collemopsidium halodytes*  
*strontianense* (Swinscow) R. C. Harris = *Collemopsidium angermannicum*  
*sublitorale* (Leighton) R. C. Harris ex Fletcher = *Collemopsidium sublitorale*

**PYRENODESMIA** A. Massal. (Arup et al. 2013)

**variabilis** (Pers.) A. Massal. Syn.: *Caloplaca variabilis*  
*albovariegata* B. de Lesd. = *Caloplaca albovariegata*  
*elaeodes* E. D. Rudolph = *Caloplaca pellodella*  
*montana* B. de Lesd. = a *Caloplaca* sp.

**PYRENOPSISIDIUM** (Nyl.) Forssell = **CRYPTOTHELE**

*granuliforme* (Nyl.) Forssell = *Cryptothele granuliformis*  
*homoeopsis* (Nyl.) Forssell = *Pyrenopsis furfurea*  
*iivarensis* (Vainio) Forssell (Thomson 1997) = *Pyrenopsis furfurea* (Henssen & Jørgensen 1990; Santesson 1993)

**PYRENOPSIS** (Nyl.) Nyl.

**compacta** Willey  
**furfurea** (Nyl.) Th. Fr. Syns.: *Pyrenopsidium homoeopsis*, *P. iivarensis*  
**fuscoatra** Fink  
**grumulifera** Nyl.  
**haemalella** (Nyl.) Blomb. & Forssell  
**haematina** P. M. Jörg. & Henssen (Spribille et al. 2010)  
**lecideella** Fink ex J. Hedrick  
**phaeococca** Tuck.  
**polycocca** (Nyl.) Tuck.  
**portoricensis** Zahlbr. (fide Perlmutter, see appendix)  
**reducta** Th. Fr. (Hutten et al. 2013)  
**sanguinea** Anzi  
**subareolata** Nyl. (Schultz 2009)  
**subfuliginea** Nyl.  
**tasmanica** Nyl.  
**triptococca** Nyl. (Schultz 2007d)  
**viridirufa** Tuck.

granatina (Sommerf.) Nyl. = *Euopsis granatina*  
 granuliformis (Nyl.) Th. Fr. = *Cryptothele granuliforme*  
 homoeopsis Nyl. = *P. furfurea*  
 melambola (Tuck.) Tuck. = *Metamelanea melambola*  
 "multispora E. Dahl" Report probably refers to *P. myriospora* E. Dahl = *P. grumulifera*  
 myriospora E. Dahl = *P. grumulifera*  
 phylliscina (Tuck.) Tuck. = *Cryptothele permiscens*  
 pulvinata (Schaerer) Th. Fr. = *Euopsis pulvinata*  
 schaeferi A. Massal. = *Psorotichia schaeferi*

**PYRENOTHAMNIA** Tuck. = **ENDOCARPON**

brandegei (Tuck.) Zahlbr. = *Endocarpon pulvinatum*  
 spraguei Tuck. = *Endocarpon pulvinatum*

**PYRENOTHRIX** Riddle

**nigra** Riddle Syn.: *Lichenothrix riddlei*

**PYRENOTRICHUM** Mont.

splitgerberi Mont. = *campylidia* of lichens

**PYRENULA** A. Massal.

**acutalis** R. C. Harris  
**acutispora** Kalb & Hafellner (Aptroot 1996)  
**adacta** Fée (Aptroot 2012)  
**anomala** (Ach.) Vainio Syn.: *Melanotheca anomala*, *M. achariana*  
**aspistea** (Ach.) Ach.  
**astroidea** (Fée) R. C. Harris Syn.: *Parmentaria astroidea*  
**atrolaminata** R. C. Harris (Aptroot 1996)  
**bahiana** Malme (Aptroot 2012)  
**balia** (Kremp.) R. C. Harris (Aptroot 2012)  
**breutelii** (Müll. Arg.) Aptroot (Aptroot 2012) Syn.: *Anthracotheceum maculare*  
**brunnea** Fée (Lücking et al. 2011b)  
**caryae** R. C. Harris (Aptroot 1996)  
**cerina** Eschw.  
**chlorospila** (Nyl.) Arnold (Aptroot 2012)  
**circumfiniens** Vainio (Aptroot 2012) Syn.: *Parathelium subferrugineum*  
**cocoes** Müll. Arg.  
**confinis** (Nyl.) R. C. Harris (Lücking et al. 2011b)  
**confoederata** R. C. Harris  
**cruenta** (Mont.) Vainio Syn.: *Melanotheca cruenta*, *M. subincruenta*, *Trypethelium cruentum*  
**cruentata** (Müll. Arg.) R. C. Harris Syn.: *Bottaria cruentata*  
**cubana** (Müll. Arg.) R. C. Harris Syn.: *Pyrenastrum cubanum*  
**cuyabensis** (Malme) R. C. Harris Syn.: *Parathelium cuyabense*  
**dermatodes** (Borrer) Schaerer (Lücking et al. 2011b)  
**dissimulans** (Müll. Arg.) R. C. Harris (Seavey & Seavey 2014a)  
**duplicans** (Nyl.) Aptroot (Lücking et al. 2011b)  
**erumpens** R. C. Harris Syn.: *Parathelium emergens*  
**fetivica** (Kremp.) Müll. Arg. (Aptroot 2012)  
**globifera** (Eschw.) Aptroot (Lücking et al. 2011b)  
**laetior** Müll. Arg. (Harris 1995a)  
**laevigata** (Pers.) Arnold  
**leucostoma** Ach. Syn.: *Anthracotheceum leucostomum*, *Parmentaria rappii*  
**macounii** R. C. Harris  
**mamillana** (Ach.) Trevisan (fide R. Harris)  
**micheneri** R. C. Harris  
**microcarpa** Müll. Arg.



**microtheca** R. C. Harris Syn.: Parathelium microcarpum  
**minor** Fée (Seavey & Seavey 2014a)  
**nitidula** (Bres.) R. C. Harris (Harris 1995a)  
**novemseptata** Vainio (Aptroot 2012) Syn.: Anthracothecium varians  
**occidentalis** (R. C. Harris) R. C. Harris  
**ochraceoflava** (Nyl.) R. C. Harris Syn.: Anthracothecium ochraceoflavum  
**ochraceoflavens** (Nyl.) R. C. Harris Syn.: Anthracothecium ochraceoflavens  
**oleosa** R. C. Harris  
**parvinuclea** (Meyen & Flotow) Aptroot (Seavey & Seavey 2014a)  
**papillifera** (Nyl.) Aptroot (Aptroot 2012)  
**pleiomeria** (Nyl.) Zahlbr. (Seavey & Seavey 2014a)  
**pseudobufonia** (Rehm) R. C. Harris  
**punctella** (Nyl.) Trevisan  
**pyrenuloides** (Mont.) R. C. Harris Syn.: Anthracothecium pyrenuloides  
**quassiicola** Fée  
**ravenelii** (Tuck.) R. C. Harris Syn.: Parmentaria ravenelii  
**reebiae** Aptroot & Gueidan ([Gueidan et al. 2016](#))  
**rubrostoma** R. C. Harris  
**schiffneri** (Zahlbr.) Aptroot (Aptroot 2012) Syn. Anthracothecium falsarium  
**septicollaris** (Eschw.) R. C. Harris Syn.: Pyrenastrum fuscum, P. pyrenastraeum  
**sexlocularis** (Nyl.) Müll. Arg. (Lücking et al. 2011b)  
**subelliptica** (Tuck.) R. C. Harris  
**subgregantula** Müll. Arg. (Aptroot 2012)  
**tenuisepta** R. C. Harris  
**thelomorpha** Tuck. Syn.: Anthracothecium thelomorphum  
**wetmorei** R. C. Harris  
**wheeleri** R. C. Harris  
 aggregata (Fée) Fée (Mohr 1901) = misidentification for North America  
 aquila R. C. Harris = P. aspistea (Aptroot 2012)  
 caraibica Aptroot & Etayo (Etayo & Aptroot 2003) = Pyrenula adacta (Aptroot 2012)  
 cerasi (Schrader) Hepp = Arthopyrenula cerasi  
 cinchonae (Ach.) Tuck. (Mohr 1901) = Arthopyrenia cinchonae  
 cinerea Zahlbr. = P. microcarpa  
 cinerella (Nyl.) Branth & Rostr. (Claassen 1912) = Microthelia micula  
 citriformis R. C. Harris = P. fetivica (Aptroot 2012)  
 clandestina Ach. (Fink 1935) Typographic error for Pyrenula clandestina Ach. = Ocellularia clandestine (Ach.) Müll. Arg., an apparent misidentification for N. America  
 concatervans (Nyl.) R. C. Harris = P. sexlocularis (Aptroot 2012)  
 corticata (Müll. Arg.) R. C. Harris = P. confinis (Aptroot 2012)  
 falsaria (Zahlbr.) R. C. Harris = P. schiffneri (Aptroot 2012)  
 farrea auct. = Eopyrenula leucoplaca, but a misidentification for North America  
 fulvella R. C. Harris = P. subgregantula  
 glabrata (Ach.) A. Massal. = P. laevigata  
 herrei Fink = Arthopyrenia plumbaria  
 imperfecta (Ellis & Everh.) R. C. Harris = P. subelliptica  
 leucoplaca (Wallr.) Körber = Eopyrenula leucoplaca, but a misidentification for North America  
 leucoplaca var. pluriloculata Fink = Eopyrenula intermedia  
 lucifera R. C. Harris = Pyrenula dermatodes (Aptroot 2012)  
 macularis (Zahlbr.) R. C. Harris = P. breutelii (Aptroot 2012)  
 maculata (R. C. Harris) R. C. Harris = P. chlorospila (Aptroot 2012)  
 mamillana (Ach.) Trevisan = misidentification for North America  
 marginata Hooker = P. mamillana  
 martinicana (Vainio) R. C. Harris = P. adacta  
 megalospora Fink = Acrocordia megalospora  
 mucosa (Vainio) R. C. Harris (Harris 1995a) = P. papillifera (Aptroot 2012)  
 neglecta R. C. Harris = P. pseudobufonia

nitida (Weigel) Ach. = misidentification for North America  
 nitidella (Flörke ex Schaerer) Müll. Arg. var. maculata R. C. Harris = *P. chlorospila* (Aptroot 2012)  
 pachycheila Tuck. (Tuckerman 1872) = *Anthracotheceum pachycheilum*  
 personata (Malme) R. C. Harris = *P. subgregantula* (Aptroot 2012)  
 pinguis (Sprengel) Fée = misidentification for North America  
 plittii R. C. Harris = *P. nitidula* (Aptroot 2012)  
 pulicina Nyl. (Fink 1935) Not located in any available source (Esslinger & Tucker 2009)  
 quinqueseptata (Nyl.) Tuck. (Tuckerman 1872) = *Polymeridium quinqueseptatum*  
 santensis (Nyl.) Müll. Arg. = *P. balia* (Aptroot 2012)  
 subaggregata Müll. Arg. Not in North America  
 subferruginea (Malme) R. C. Harris = *P. circumfiniens* (Aptroot 2012)  
 subprostans (Nyl.) Tuck. (Tuckerman 1872) = *Anisomeridium subprostans*  
 texana Tuck. ex R. C. Harris = *P. microcarpa*  
 tropica (Ach.) Trevisan = *Trypethelium tropicum*  
 xyloides (Eschw.) Müll. Arg. = *P. mamillana*

#### PYRENULELLA Fink = PHAEOSPORA

\*endococcoidea (Nyl.) Fink = *Phaeospora rimosicola*

#### PYRGILLUS Nyl.

**javanicus** (Mont. & Bosch) Nyl.  
 americanus Nyl. = *P. javanicus*

#### PYRRHOSPORA Körber

**quernea** (Dickson) Körber Syns.: *Protoplastenia quernea*, *Lecidea quernea*  
 cinnabarina (Sommerf.) M. Choisy = *Ramboldia cinnabarina*  
 elabens (Fr.) Hafellner = *Ramboldia elabens*  
 gowardiana T. Sprib. & Hauck (Spribille & Hauck 2003) = *Ramboldia gowardiana*  
 russula (Ach.) Hafellner = *Ramboldia russula*  
 subcinnabarina (Tønsberg) Hafellner = *Ramboldia subcinnabarina*  
 varians (Ach.) R. C. Harris = *Lecidea varians*

#### PYXINE Fr.

**albovirens** (G. Meyer) Aptroot  
**berteriana** (Fée) Imshaug  
**caesiopruinosa** (Nyl.) Imshaug Possibly a synonym of *P. albovirens*?  
**cocoes** (Sw.) Nyl.  
**coralligera** Malme  
**eschweileri** (Tuck.) Vainio  
**meissneriana** Nyl. (Nash et al. 1998)  
**petricola** Nyl.  
**retirugella** Nyl.  
**sorediata** (Ach.) Mont.  
**subcinerea** Stirton (Amtoft 2002)  
 chrysanthoides Vainio = *P. subcinerea*  
 daedalea Krog & R. Sant. = misidentification for North America  
 frostii Tuck. = *Dirinaria frostii*  
 meissneri Tuck. = *P. berteriana*  
 picta (Sw.) Tuck. = *Dirinaria picta*  
 pringlei Imshaug = *P. petricola*

#### RACIBORSKIOMYCES Siemaszko (Diederich 2003)

\***peltigericola** (D. Hawksw.) M. E. Barr Syn.: *Wentomyces peltigericola* (Diederich 2003)

#### RACODIUM Pers. : Fr.

**rupestre** Pers.



**RAESAENENIA** D. Hawksw., Boluda & H. Lindgr.

\***huuskonenii** (Räsänen) D. Hawksw., Boluda & H. Lindgr. Syn.: *Phacopsis huuskonenii* (Divakar et al. 2015)

**RAMALINA** Ach.

**ahtii** Kashiw. & T. H. Nash

**almquistii** Vainio Syn.: *Fistulariella almquistii*

**americana** Hale Earlier North American reports of *R. fastigiata* belong here.

**baltica** Lettau

**bistorta** Nyl.

**calicaris** (L.) Fr.

**canariensis** J. Steiner

**celastri** (Sprengel) Krog & Swinscow

**complanata** (Sw.) Ach.

**culbersoniorum** LaGreca (LaGreca 1999)

**dasypoga** Tuck.

**dendriscoides** Nyl.

**denticulata** Nyl.

**dilacerata** (Hoffm.) Hoffm. Syn.: *Fistulariella minuscula*

**farinacea** (L.) Ach.

**fastigiata** (Pers.) Ach. Earlier reports of this species from North America refer to *R. americana*

**fraxinea** (L.) Ach.

**geniculata** Hooker f. & Taylor Syn.: *Fistulariella geniculata*

**inflata** (Hooker f. & Taylor) Hooker f. & Taylor subsp. **inflata** Syn.: *Fistulariella inflata*

**intermedia** (Delise ex Nyl.) Nyl.

**lacera** (With.) J. R. Laundon

**leptocarpha** Tuck.

**leptosperma** Nyl. (Seavey & Seavey 2014a)

**linearis** (Sw.) Ach.

**menziesii** Taylor

**montagnei** De Not.

**obtusata** (Arnold) Bitter

**paludosa** B. J. Moore

**peruviana** Ach. Syn.: *Desmazieria peruviana*

**petrina** Bowler & Rundel

**pollinaria** (Westr.) Ach.

**polymorpha** (Lilj.) Ach.

**puberulenta** Riefner & Bowler

**rigida** Pers. ex Ach.

**roesleri** (Hochst. ex Schaerer) Hue Syn.: *Fistulariella roesleri*

**scoparia** Vainio Syn.: *Fistulariella scoparia*

**sinensis** Jatta

**sonorensis** Kashiw. & T. H. Nash (Kashiwadani & Nash 2004)

**sorediantha** Nyl.

**stenospora** Müll. Arg.

**subleptocarpha** Rundel & Bowler

**subpellucida** Müll. Arg.

**tenuis** (Tuck.) G. Merr.

**thrausta** (Ach.) Nyl. Syn.: *Alectoria thrausta*

**unifolia** J. W. Thomson

**usnea** (L.) R. Howe

**willeyi** R. Howe

*canaliculata* (Fr.) Herre (Fink 1935) = *Ramalina calicaris* (Nimis & Martellos 2003)

*cephalota* Tuck. = *Niebla cephalota*

*ceruchis* (Ach.) De Not. = *Niebla ceruchis*

cochlearis Zahlbr. = misidentification for North America  
 combeoides Nyl. = Niebla combeoides  
 crinita Tuck. = Trichoramalina crinita  
 cuspidata (Ach.) Nyl. (Fink 1935) = misidentification for North America  
 duriaei (De Not.) Bagl. = R. lacera  
 ecklonii auct. = R. celastri  
 ecklonii (Sprengel) G. Meyer & Flotow Not known from North America.  
 evernioides Nyl. = R. lacera  
 flaccescens Nyl. = Niebla flaccescens  
 homalea Ach. = Niebla homalea  
 hypoprotocetrarica W. L. Culb. = R. farinacea  
 laevigata Fr. = R. celastri  
 menziesii Tuck. non Taylor = R. leptocarpha  
 minuscula (Nyl.) Nyl. = R. dilacerata  
 pollinariella Nyl. = R. roesleri  
 populina (Hoffm.) Vainio = R. fastigiata  
 reagens (B. de Lesd.) W. L. Culb. = R. farinacea  
 reticulata (Nöhden) Kremp. = R. menziesii  
 scopulorum (Retz.) Ach. (Fink 1935) = misidentification for North America  
 subampliata (Nyl.) Fink = misidentification for North America  
 subfraxinea Nyl. (Fink 1935) = misidentification for North America  
 testudinaria Nyl. = Niebla homalea  
 usneoides (Ach.) Fr. (Fink 1935) = misidentification for North America  
 yemensis (Ach.) Nyl. = R. celastri

#### **RAMBOLDIA** Kantvilas & Elix

**blochiana** Lendemer & R. C. Harris (Lendemer & Harris 2011)  
**cinnabarina** (Sommerf.) Kalb, Lumbsch & Elix Syns.: Lecidea cinnabarina, Protoblastenia cinnabarina (Kalb et al. 2008)  
**elabens** (Fr.) Kantvilas & Elix (Kantvilas & Elix 2007) Syns.: Lecidea elabens, L. melancheima, Pyrrhospora elabens  
**gowardiana** (T. Sprib. & Hauck) Kalb, Lumbsch & Elix Syn.: Pyrrhospora gowardiana (Kalb et al. 2008)  
**russula** (Ach.) Kalb, Lumbsch & Elix Syns.: Biatora russula, Lecidea russula, Protoblastenia russula, Pyrrhospora russula (Kalb et al. 2008)  
**subcinnabarina** (Tønsberg) Kalb, Lumbsch & Elix Syns.: Lecidea subcinnabarina, Pyrrhospora subcinnabarina (Kalb et al. 2008)

#### **RAMONIA** Stizenb.

**ablephora** (Nyl. ex Hasse) R. C. Harris Syns.: Lecidea ablephora  
**absconsa** (Tuck.) Vězda  
**extensa** Lendemer, K. Knudsen & Coppins (Lendemer et al. 2009a)  
**gyalectiformis** (Zahlbr.) Vězda  
**malmei** Vězda  
**microspora** Vězda Syn.: Biatorella rappii  
**rappii** Vězda  
**valenzueliana** (Mont.) Stizenb. Syn.: Maronea porinoidea  
**vermispora** Lendemer & K. Knudsen (Lendemer & Knudsen 2008a)

#### **RECHINGERIA** Servít = LICHINELLA

cribellifera (Nyl.) Servít = Lichinella cribellifera

#### **RECONDITELLA** Matzer & Hafellner

**\*physconiarum** Matzer & Hafellner (Lendemer et al. 2009b)



**REFRACTOHILUM** D. Hawksw.

\***galligenum** D. Hawksw. (Alstrup & Cole 1998)

\***peltigerae** (Keissler) D. Hawksw.

**REIMNITZIA** Kalb

**santensis** (Tuck.) Kalb Syns.: *Leptotrema santense*, *Thelotrema santense* (Kalb 2001)

**REINKELLA** Darb. (Tehler et al. 1997)

**californica** Räsänen = *Hubbsia californica*

**parishii** Hasse = *Schizopelte parishii* (Ertz & Tehler 2011)

**subcrustacea** Räsänen = *Schizopelte parishii* (Ertz & Tehler 2011)

**RELICINA** (Hale & Kurok.) Hale

**abstrusa** (Vainio) Hale Syn.: *Parmelia abstrusa*

**eximbricata** (Gyelnik) Hale Syn.: *Parmelia eximbricata*

**REQUIENELLA** Fabre

**subcollapsa** (Ellis & Everhart) R. C. Harris (Harris 1995a)

#**seminuda** (Pers. : Fr.) Boise ([Aptroot 1991](#)) European, according to Harris (1995a)

**RHABDODISCUS** Vainio (Rivas Plata et al. 2012)

**emersus** (Kremp.) Rivas Plata, Lücking & Lumbsch Syns.: *Ocellularia emersa*, *Stegobolus emersus*

**granulosus** (Tuck.) Rivas Plata, Lücking & Lumbsch Syns.: *Ocellularia granulosa*, *Stegobolus granulatus*, *Thelotrema granulatum*

**RHABDOSPORA** (Durieu & Mont.) Mont.

**lecanorae** B. de Lesd. = pycnidia of *Lecanora thalli* (Hawksworth 1981, Kalb et al. 1995)

**RHAGADOSTOMA** Körber

\***lichenicola** (De Not.) Keissler (Alstrup & Cole 1998)

**RHIZOCARPON** Ramond ex DC.

**alaxense** J. W. Thomson

**alpicola** (Anzi) Rabenh.

**amphibium** (Fr.) Th. Fr. (Hinds et al. 2002)

**anaperum** (Vainio) Vainio

**anseris** Lynge

**arctogenum** Gelting (Nash et al. 1998)

**atroflavescens** Lynge

**atrovirellum** (Nyl.) Zahlbr. (McCune et al. 2014b)

**badioatrum** (Flörke ex Sprengel) Th. Fr. Syn.: *Buellia badioatra*

**bolanderi** (Tuck.) Herre

**caesium** Fryday (Fryday 2002)

**chioneum** (Norman) Th. Fr.

**cinereonigrum** Vainio

**cinereovirens** (Müll. Arg.) Vainio

**concentricum** (Davies) Beltr.

**cookeanum** H. Magn.

**copelandii** (Körber) Th. Fr.

#**dimelaenae** Timdal (Feuerer & Timdal 2004)

\***diploschistidina** McCune (Lumbsch et al. 2011)

**disporum** (Nägeli ex Hepp) Müll. Arg.

**distinctum** Th. Fr.

#**effiguratum** (Anzi) Th. Fr.

**eupetraeoides** (Nyl.) Blomb. & Forssell

**eupetraeum** (Nyl.) Arnold

**expallescens** Th. Fr.  
**ferax** H. Magn.  
**frigidum** Räsänen  
**geminatum** Körber  
**geographicum** (L.) DC. Syn.: *Buellia geographica*  
**grande** (Flörke ex Flotow) Arnold  
**hensseniae** Brodo  
**hochstetteri** (Körber) Vainio Syn.: *Buellia colludens*, *Lecidea colludens*, *Rhizocarpon colludens*  
**inarense** (Vainio) Vainio  
**infernum** (Nyl.) Lynge (Fryday 2002)  
**intermediellum** Räsänen  
**intersitum** Arnold  
**jemtlandicum** (Malme) Malme  
**lavatum** (Fr.) Hazsl.  
**lecanorinum** Anders  
**lindsayanum** Räsänen Possibly a subspecies of *R. geographicum*  
**macrosporum** Räsänen  
**malenconianum** (Llimona & Werner) Hafellner & Mayrhofer (McCune & Ponzetti 2005)  
**microsporum** Lynge  
**norvegicum** Räsänen  
**oederi** (Weber) Körber  
**parvum** Runemark May not be distinct from *R. norvegicum*  
**petraeum** (Wulfen) A. Massal.  
**polycarpoides** Degel.  
**polycarpum** (Hepp) Th. Fr.  
**postumum** (Nyl.) Arnold  
**praebadium** (Nyl.) Zahlbr.  
<sup>#</sup>**pusillum** Runemark  
**quinonum** [McCune, Timdal & Bendiksby \(McCune et al. 2016\)](#)  
**reductum** Th. Fr. (Fryday 2000)  
<sup>#</sup>**renneri** Poelt  
**riparium** Räsänen Possibly a subspecies of *R. geographicum*  
**rittokense** (Hellbom) Th. Fr.  
**rubescens** Th. Fr. (Fryday 2000)  
**saanaëense** Räsänen Syn.: *R. sublucidum*  
<sup>\*</sup>**santessonii** Timdal  
**saurinum** (W. A. Weber) Bungartz Syn.: *Buellia saurina* (Bungartz & Fryday 2004)  
**simillimum** (Anzi) Lettau  
**subgeminatum** Eitner  
**submodestum** (Vainio) Vainio  
**sulphurosum** (Tuck. ex Willey) Lendemer (Lendemer et al. 2010)  
**suomiense** Räsänen (MacDonald et al. 2011)  
**superficiale** (Schaerer) Vainio  
**superficiale** subsp. **boreale** Runemark  
**tetramerum** (Vainio) Vainio  
**timdalii** Ihlen & Fryday (Ihlen & Fryday 2002)  
**umbilicatum** (Ramond) Flagey  
**vernicoideum** Fink  
<sup>#</sup>**viridiatrum** (Wulfen) Körber  
albineum (Tuck.) Fink = *R. obscuratum*  
alboatrum (Hoffm.) Anzi = *Diplotomma alboatrum*  
applanatum (Fr.) Th. Fr. (Hambleton 1910) Probable misidentification of *R. hochstetteri*  
athalloides (Nyl.) Hasse = *Diploschistella athalloides*  
ambiguum (Schaerer) Zahlbr. = *R. distinctum*  
atroalbescens (Nyl.) Zahlbr. = *R. eupetraeoides*  
chionophilum Th. Fr. = *R. alpicola*



chlorophaeum Hepp ex Leighton = *Diplotomma chlorophaeum*  
 colludens (Nyl.) Fryday (Mohr 1901) = *Rhizocarpon hochstetteri*  
 concentricum auct. = *R. petraeum*  
 concretum (Ach.) Elenkin = *R. geminatum*  
 crystalligenum Lynge = *R. superficiale* subsp. *boreale*  
 cumulatum J. W. Thomson = *Diplotomma epipolium* (as *Buellia*, Feuerer 1991)  
 disporum auct. = *R. geminatum*  
 infernulum f. *sylvaticum* Fryday (Fryday 2002) = *R. infernulum*  
 intermedium Degel. = *R. eupetraeum*  
 interponens (Nyl.) Zahlbr. = *R. obscuratum*  
 montagnei Körber = *R. disporum*  
 obscuratum (Ach.) A. Massal. = misidentification for North America (Fryday 2000); mostly *R. lavatum*/*R. reductum*  
 occidentale Lynge = *R. superficiale*  
 oidaleum (Nyl.) Fink = *Buellia oidalea*  
 oreites (Vainio) Zahlbr. = *R. alpicola*  
 penichrum (Tuck.) G. Merr. = *Diplotomma penichrum*  
 permodestum Arnold = *R. obscuratum*  
 plicatile auct. North American = *R. rubescens* Th. Fr.?  
 plicatile (Leighton) A. L. Sm. = *Stereocaulon plicatile* (Leighton) Fryday & Coppins (Fryday & Coppins 1996) Not known from North America  
 polare Räsänen = *R. superficiale*  
 sphaerosporum Räsänen = *R. macrosporum* Räsänen  
 subconcentricum (Körber) Körber (Mohr 1901) = *R. petraeum*  
 sublucidum Räsänen = *R. saanaense* Räsänen.  
 subpostumum (Nyl.) Arnold (Knudsen & Kocourková 2009b) = misidentification for N.A. (Knudsen & Kocourková 2012c)  
 subtile Runemark = *R. viridiatrum*

#### **RHIZOPLACA** Zopf

**chrysoleuca** (Sm.) Zopf Syns.: *Lecanora chrysoleuca*, *L. rubina*  
**glaucophana** (Nyl. ex Hasse) W. A. Weber Syn.: *Lecanora glaucophana*, *Harpidium glaucophanum*  
**haydenii** (Tuck.) W. A. Weber Syn.: *Lecanora haydenii*  
**haydenii** subsp. **arbuscula** Rosentreter (McCune & Rosentreter 2007)  
**idahoensis** Rosentreter & McCune (McCune & Rosentreter 2007)  
**marginalis** (Hasse) W. A. Weber Syn.: *Lecanora marginalis*  
**melanophthalma** (DC.) Leuckert & Poelt Syn.: *Lecanora melanophthalma*  
**melanophthalma** subsp. **cerebriformis** Rosentreter & B. D. Ryan (McCune & Rosentreter 2007)  
**melanophthalma** subsp. **crispa** Rosentreter & B. D. Ryan (McCune & Rosentreter 2007)  
**nigromarginata** (H. Magn.) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora nigromarginata*  
**novomexicana** (H. Magn.) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syns.: *Lecanora novomexicana*, *L. thomsonii*  
**opiniconensis** (Brodo) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora opiniconensis*  
**phaedrophthalma** (Poelt) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora phaedrophthalma*  
**subdiscrepans** (Nyl.) R. Sant.  
**weberi** (Ryan) Leavitt, Zhao Xin & Lumbsch (Zhao et al. 2016) Syn.: *Lecanora weberi*  
*peltata* (Ramond) Leuckert & Poelt = *Protoparmeliopsis peltata*

#### **RHYMBOCARPUS** Zopf

\***boomii** Etayo & Diederich (Diederich & Etayo 2004a)  
 \***cruciatus** (Sherwood, D. Hawksw. & Coppins) Etayo & Diederich (Diederich 2003)  
 \***neglectus** (Vainio) Diederich & Etayo Syn.: *Llimoniella neglecta* (Diederich & Etayo 2000)  
 \***stereocaulorum** (Alstrup & D. Hawksw.) Etayo & Diederich (Zhurbenko 2010)

**RIMELIA** Hale & Fletcher = **PARMOTREMA** (Blanco et al. 2005)

*cetrata* (Ach.) Hale & Fletcher = *Parmotrema cetratum*

*commensurata* (Hale) Hale & Fletcher = *Parmotrema commensuratum*

*diffRACTAICA* (Essl.) Hale & Fletcher = *Parmotrema diffRACTAICUM*

*reticulata* (Taylor) Hale & Fletcher = *Parmotrema reticulatum*

*simulans* (Hale) Hale & Fletcher = *Parmotrema simulans*

*subisidiosa* (Müll. Arg.) Hale & Fletcher = *Parmotrema subisidiosum*

**RIMELIELLA** Kurok. = **PARMOTREMA** (Blanco et al. 2005)

*conferenda* (Hale) Kurok. = *Parmotrema conferendum*

*neotropica* (Kurok.) Kurok. = *Parmotrema neotropicum*

*subsumpta* (Nyl.) Kurok. = *Parmotrema subsumptum*

*subtinctoria* (Zahlbr.) Kurok. = *Parmotrema subtinctorium*

**RIMULARIA** Nyl.

**actinostoma** Coppins & Fryday (Coppins & Fryday 2006a)

**badioatra** (Kremp.) Hertel & Rambold

**gibbosa** (Ach.) Coppins, Hertel & Rambold Syns.: *Mosigia gibbosa*, *Lecanora bockii*

**limborina** Nyl. Syns.: *Lecidea limborina*, *L. trochodes*

**paradoxa** Timdal & W. A. Weber (Timdal 2002b)

**caeca** (J. Lowe) Rambold & Printzen = *Lambiella caeca* (Resl et al. 2015)

**furvella** (Nyl. ex Mudd) Hertel & Rambold = *Lambiella furvella* (Resl et al. 2015)

**gyrizans** (Nyl.) Hertel & Rambold = *Lambiella gyrizans* (Resl et al. 2015)

**impavida** (Th. Fr.) Hertel & Rambold = *Lambiella impavida* (Resl et al. 2015)

<sup>#</sup>**insularis** (Nyl.) Rambold & Hertel = *Lambiella insularis* (Spribille et al. 2014a)

**sphacelata** (Th. Fr.) Hertel & Rambold = *Lambiella sphacelata* (Resl et al. 2015)

**RINODINA** (Ach.) Gray

**adirondackii** H. Magn.

**albertana** Sheard (Sheard 2010)

**archaea** (Ach.) Arnold

**ascociscana** (Tuck.) Tuck.

**aspersa** (Borrer) J. R. Laundon (Glew 1999)

**athallina** H. Magn.

**aurantiaca** Sheard (Sheard & Mayrhofer 2002)

**austroborealis** Sheard (Sheard 2010)

**badiexcipula** Sheard (Sheard & Mayrhofer 2002)

**bischoffii** (Hepp) A. Massal.

**bolanderi** H. Magn.

**boleana** Giralt & H. Mayrhofer (Sheard et al. 2011)

**boulderensis** Sheard (Sheard & Mayrhofer 2002)

**brodoana** Sheard, Lendemer & E. Tripp (Lendemer et al. 2014)

**brouardii** B. de Lesd.

**buckii** Sheard (Sheard et al. 2012)

**bullata** Sheard & Lendemer (Sheard et al. 2012)

**calcigena** (Th. Fr.) Lynge

**californiensis** Sheard (Sheard & Mayrhofer 2002)

**campestris** Sheard & C. A. Morse (Sheard et al. 2011)

**cana** (Arnold) Arnold (Wilhelm 1998)

**capensis** Hampe

**castanomela** (Nyl.) Arnold

**castanomelodes** H. Mayrhofer & Poelt

**chrysidata** Sheard (Lendemer et al. 2012)

**chrysomelaena** (Ach.) Tuck. (Lendemer & Sheard 2006)

**colobina** (Ach.) Th. Fr.

**colobinoides** (Nyl.) Zahlbr.



**coloradiana** H. Magn.  
**confragosa** (Ach.) Körber  
**confragosula** (Nyl.) Müll. Arg. (Sheard 2010)  
**conradii** Körber  
**destituta** (Nyl.) Zahlbr.  
**disjuncta** Sheard & Tønsberg  
**dolichospora** Malme (Sheard & Mayrhofer 2002)  
**efflorescens** Malme  
**endophragmia** I. M. Lamb  
**endospora** Sheard (Sheard & Mayrhofer 2002)  
**excrescens** Vainio  
**exigua** (Ach.) Gray  
**fimbriata** Körber (Sheard 2010)  
**flavosoralifera** Tønsberg (Tønsberg 2002)  
**freyi** H. Magn. (Sheard 2010)  
**gennarii** Bagl.  
**grandilocularis** Sheard (Sheard & Mayrhofer 2002)  
**granuligera** H. Magn.  
**griseosoralifera** Coppins (Tønsberg 1993a)  
**guzzinii** Jatta (Sheard 2004)  
**hallii** Tuck. Syn. *Lecanora exigua* f. *pruinosa*  
**herrei** H. Magn.  
**imshaugii** Sheard (Sheard 2010)  
**innata** Sheard (Sheard & Mayrhofer 2002)  
**intermedia** Bagl. (Mayrhofer et al. 2001)  
**intrusa** (Nyl.) Malme (Sheard 2010)  
**juniperina** Sheard (Sheard & Mayrhofer 2002)  
**laevigata** (Ach.) Malme  
**lepida** (Nyl.) Müll. Arg.  
**lobulata** H. Mayrhofer & Sheard (Sheard & Mayrhofer 2002)  
**luridata** (Körber) H. Mayrhofer, Scheid. & Sheard  
**macrospora** Sheard (Sheard & Mayrhofer 2002)  
**maculans** Müll. Arg. (Sheard 2010)  
**marysvillensis** H. Magn.  
**megistospora** Sheard & H. Mayrhofer (Sheard et al. 2011)  
**metaboliza** Vainio  
**milvina** (Wahlenb.) Th. Fr.  
**mniaraea** (Ach.) Körber  
**mniaraea** var. **cinnamomea** Th. Fr. (Spribille et al. 2010)  
**mniaraeiza** (Nyl.) Arnold (Resl et al. 2016)  
**notabilis** (Lynge) Sheard Syn.: *Buellia notabilis* (Sheard 2010)  
<sup>#</sup>**obnascens** (Nyl.) Oliv. (Sheard 2010)  
**ochracea** Lynge (Sheard et al. 2012)  
**oleae** Bagl. (Sheard 2010)  
**olivaceobrunnea** C. W. Dodge & Baker  
**orculata** Poelt & M. Steiner (Mayrhofer & Sheard 2007)  
**oregana** H. Magn.  
**oxydata** (A. Massal.) A. Massal.  
**pachysperma** H. Magn.  
**pacifica** Sheard (Sheard & Mayrhofer 2002)  
**pallidescens** Sheard & Tønsberg (Sheard et al. 2014)  
**papillata** H. Magn.  
<sup>#</sup>**parasitica** H. Mayrhofer & Poelt  
**perreagens** Sheard (Sheard & Mayrhofer 2002)  
**pityrea** Ropin & H. Mayrhofer (Sheard 2011)  
**poeltiana** Giralt & Obermayer (Sheard 2004)

**polyspora** Th. Fr.  
**populicola** H. Magn.  
**pycnocarpa** H. Magn. (Sheard 2010)  
**pyrina** (Ach.) Arnold  
**rinodinoides** (Anzi) H. Mayrhofer & Scheid. (Sheard 2004)  
**riparia** Sheard (Sheard 1998)  
**roscida** (Sommerf.) Arnold  
**santae-monicae** H. Magn.  
**septentrionalis** Malme  
**sheardii** Tønsberg  
**sibirica** H. Magn. (Sheard 2010)  
**siouxiana** Sheard (Sheard 2010)  
**stictica** Sheard & Tønsberg  
**straussii** J. Steiner (Sheard 2010)  
**subminuta** H. Magn.  
**subparieta** (Nyl.) Zahlbr. (Resl. et al. 2016)  
**tephraspis** (Tuck.) Herre  
**terrestris** Tomin (Zhurbenko et al. 2006)  
**terricola** Sheard & K. Knudsen (Sheard et al. 2011)  
**trevisanii** (Hepp) Körber (Sheard 2004)  
**turfacea** (Wahlenb.) Körber  
**venostana** Buschardt & H. Mayrhofer (Freebury 2014)  
**verruciformis** Sheard (Sheard & Mayrhofer 2002)  
**wetmorei** Sheard (Sheard 2010)  
**willeyi** Sheard & Giralt (Sheard 1995)  
**zwackhiana** (Kremp.) Körber  
 americana B. de Lesd. Identity not established (Sheard 2010)  
 angelica Stizenb. = *Mobergia angelica*  
 annulata H. Magn. = *R. subminuta* (Sheard 2010)  
 applanata H. Magn. = *R. maculans* (Sheard 2010)  
 archaeoides H. Magn. = *R. olivaceobrunnea*  
 arctica H. Magn. = *R. olivaceobrunnea* (Sheard 2010)  
 aterrima Kremp. ex Anzi = *Lichenothelia scopularia*  
 atrocinerea (Hooker) Körber = misidentification for North America  
 biatorina Körber = *R. oxydata*  
 biatorina sensu Fink = *R. destituta* (Sheard 2010)  
 bolodes Tuck. ex Fink = *Mobergia angelica*  
 cacuminum (Th. Fr.) Malme = *Amandinea cacuminum*  
 calculiformis W. A. Weber = *Mobergia calculiformis*  
 californica H. Magn. = *Dimelaena californica*  
 cinereovirens (Vainio) Vainio = *R. turfacea* (Sheard 2010)  
 constans (Nyl.) Tuck. = *Maronea constans*  
 constrictula H. Magn. = *R. straussii* (Sheard 2010)  
 corticola (Arnold) Arnold = *R. capensis*  
 dakotensis H. Magn. = *Amandinea dakotensis*  
 darrowii E. D. Rudolph ("darrovii") = *R. intermedia*  
 degeliana Coppins = *R. subparieta* (Resl. et al. 2016)  
 dirinoides Zahlbr. = *Mobergia angelica*  
 diskoensis Sheard ined. (Thomson 1997) = *R. endophragmia* (Sheard 2010)  
 dissa (Stirton) H. Mayrhofer = *Hafellia dissa*, but not in North America  
 exigua var. glauca H. Magn. = *R. oleae* (Sheard 2010)  
 euryspora Zahlbr. = *R. luridata*  
 farinosa Sheard ined. (Brodo 1988) = *R. efflorescens* (Sheard 2010)  
 finkii H. Magn. = *Amandinea dakotensis*  
 flavonigella Tuck. = *R. lepida* (Sheard 2010)  
 glauca Ropin = *R. freyi* (Sheard 2010)



*granulans* Vainio sensu Thomson (1997) = *R. sibirica* (Sheard 2010)  
*halei* H. Magn. = *R. subminuta* (Sheard 2010)  
*hueana* Vainio = *Dimelaena oreina*  
*hyperborea* H. Magn. = *R. septentrionalis* (Sheard 2010)  
*inaequalis* H. Magn. = *Amandinea dakotensis*  
*\*insularis* (Arnold) Hafellner (Sheard 2004) = *Endohyalina insularis*  
*interpolata* (Stirton) Sheard (Thomson 1997) = misidentification for *N.A.* (Sheard 2010)  
*iowensis* Zahlbr. = *R. cana* (Sheard 2010)  
*kentuckyensis* Fink = *R. tephrae*  
*lecanoides* B. de Lesd. Identity not established (Sheard 2010)  
*lecanorina* (A. Massal.) A. Massal. = misidentification for *N. A.* (Sheard 2010)  
*lecideoides* (Nyl.) Kernst. = *R. archaea* (Mayrhofer & Sheard 2007)  
*lignaria* H. Magn. = *R. trevisanii*  
*lignicola* Sheard (Sheard & Mayrhofer 2002) = *R. archaea* (Mayrhofer & Sheard 2007)  
*lycopodiicola* B. de Lesd. Identity not established (Sheard 2010)  
*lyngei* Sheard ined. (Thomson 1997) = *R. endophragmia* (Sheard 2010)  
*magnussonii* Sheard ined. (Brodo 1988) = *R. freyi* (Sheard 2010)  
*mamillana* (Tuck.) W. A. Weber = *Buellia mamillana*  
*marysvillensis* var. *thujae* H. Magn. = *R. excrescens* (Sheard 2010)  
*microbola* Tuck. ex Fink = *Buellia microbola*  
*minutissima* B. de Lesd. Identity not established (Sheard 2010)  
*milliaria* Tuck. = *Amandinea milliaria*  
*mucronatula* H. Magn. = *R. terrestris*  
*nigra* Fink = *Buellia nigra*  
*nimbosa* (Fr.) Th. Fr. = *Phaeorrhiza nimbosa*  
*novomexicana* B. de Lesd. = *Dimelaena oreina*  
*occidentalis* Lynge = *R. calcigena*  
*ocellata* (Hoffm.) Arnold = *R. lecanorina*, but a misidentification for *N. A.* (Sheard 2010)  
*ochrocea* Willey ex Hedrick = *R. destituta* (Sheard 2010)  
*orbata* (Ach.) Vainio = *R. turfacea*  
*oreina* (Ach.) A. Massal. = *Dimelaena oreina*  
*palustris* Willey nom. inval. = *R. populicola* (Sheard 2010)  
*penardiana* Müll. Arg. = a *Buellia* sp. (Sheard 2010)  
*pennsylvanica* H. Magn. = *Amandinea dakotensis*  
*phaeocarpa* (Sommerf.) Vainio = *Phaeorrhiza nimbosa*  
*platyloba* Willey = nom. nudum = *Mobergia calculiformis*  
*pyriniformis* H. Magn. = *Amandinea dakotensis*  
*radiata* Tuck. = *Dimelaena radiata*  
*roboris* (Dufour ex Nyl.) Arnold Known only from Mexico  
*sabulosa* Tuck. = *R. intermedia*  
*salina* Degel. = *R. gennarii*  
*sexigua* Ach. (Claassen 1912) Apparent Freudian typographical error for *R. exigua*  
*silicicola* B. de Lesd. Identity not established (Sheard 2010)  
*sophodes* (Ach.) A. Massal. = misidentification for North America  
*suboreina* B. de Lesd. = *Dimelaena oreina*  
*subsophodes* (Nyl. ex Lindsay) Zahlbr. = *R. ascociscana* (Sheard 2010)  
*succedens* Nyl. (Fink 1935) = apparent misidentification for North America (Tucker & Ryan 2006)  
*subplumbea* H. Magn. = *Amandinea dakotensis*  
*thomae* Tuck. (Fink 1935) = *Buellia mamillana* (Bungartz et al. 2004)  
*thomsonii* Sheard (Sheard 1995) = *R. santae-monicae* (Sheard 2010)  
*thujae* (H. Magn.) Sheard = *R. excrescens*  
*thysanota* Tuck. = *Dimelaena thysanota*  
*vegassii* B. de Lesd. Identity not established (Sheard 2010)  
*verrucosa* G. K. Merr. ex Sheard ined. Identity uncertain (Sheard 2010)  
*vezdae* H. Mayrhofer (Harris & Ladd 2005, Lendemer & Macklin 2006) = *R. destituta* (Sheard 2010)  
*violascens* H. Magn. = *R. zwackhiana*

ROBERGEA Desm.

pupula (Nyl.) R. C. Harris Syn.: *Belonia americana* Excluded as a non-lichen

ROCCELLA DC.

**decipiens** Darb.

**gracilis** Bory (Tehler 2006)

*babingtonii* Mont. = *R. decipiens*

*babingtonii* sensu auct. North American = *R. gracilis* (Tehler 2006)

*difficilis* Darb. = *R. gracilis* (Tehler 2002b, 2006)

*fimbriata* Darb. = *R. decipiens* (Tehler 2002b; Tehler et al. 2004)

*fuciformis* (L.) DC. = misidentification for North America (Tehler et al. 2004)

*fucoides* (Dickson) Vainio = *R. phycopsis* (Tehler 2002a, 2003)

*leucophaea* Tuck. = *Dendrographa leucophaea*

*montagnei* Bél. = misidentification for North America (Tehler et al. 2004)

*peruensis* Kremp. = *R. gracilis* (Tehler 2006)

*phycopsis* (Ach.) Ach. = misidentification for North America (Tehler et al. 2004)

*tinctoria* DC. = misidentification for North America (Tehler et al. 2004)

ROCCELLINA Darb.

*conformis* Tehler = *Dendrographa conformis* (Ertz & Tehler 2011)

*franciscana* (Zahlbr. ex Herre) Follmann = *Dendrographa franciscana* (Ertz & Tehler 2011)

ROMJULARIA Timdal

**lurida** (Ach.) Timdal Syns.: *Mycobilimbia lurida*, *Lecidea lurida*, *L. petri*, *Biatora lurida*, *B. petri*, *Psora lurida* (Timdal 2007)

ROPALOSPORA A. Massal.

**chlorantha** (Tuck.) S. Ekman Syn.: *Bacidia chlorantha*

**hibernica** (P. James & Poelt) Tønsberg

**lugubris** (Sommerf.) Poelt Syns.: *Bacidia lugubris*, *Bilimbia caudata*, *Lecidea lugubris*, *L. caudata*

**viridis** (Tønsberg) Tønsberg

ROSELLINIELLA Vainio (Goward et al. 1996)

\***atlantica** Matzer & Hafellner (Etayo & Breuss 1998)

\***cladoniae** (Anzi) Matzer & Hafellner (Diederich 2003)

\***microthelia** (Wallr.) Nik. Hoffm. & Hafellner (Kocourková 2007)

\***nephromatis** (Crouan) Matzer & Hafellner (Goward et al. 1996)

\***peltigericola** D. Hawksw. & Miądl. (Zhurbenko & Laursen 2003)

\***stereocaulorum** Zhurb., Kukwa, & Oset (Zhurbenko et al. 2009)

ROSELLINIOPSIS Matzer & Hafellner

\***gelidaria** (Mudd) Matzer Syn.: *Polycoccum gelidarium*

\***tartaricola** (Nyl.) Matzer (Hafellner 2004e)

\***tropica** Matzer & Hafellner (Lendemer & Harris 2014b)

ROSELLINULA R. Sant. (Kalb et al. 1995)

\***haplospora** (Nyl.) R. Sant. (Lendemer & Harris 2012)

\***kalbii** (Hafellner) Hafellner & R. W. Rogers (Kalb et al. 1995)

ROSTANIA Trevisan (Otálora et al. 2014)

**callibotrys** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema callibotrys*

**ceranisca** (Nyl.) Otálora, P. M. Jørg. & Wedin Syns.: *Collema arcticum*, *C. ceraniscum*

**occultata** (Bagl.) Otálora, P. M. Jørg. & Wedin Syn.: *Collema occultatum*

**quadrifida** (D. F. Stone & McCune) McCune (McCune et al. 2014b)



**RUFOPLACA** Arup, Söchting & Frödén (Arup et al. 2013)

**arenaria** (Pers.) Arup, Söchting & Frödén Syn.: *Caloplaca arenaria*

**oxfordensis** (Fink) Arup, Söchting & Frödén Syn.: *Caloplaca oxfordensis*

**RUSAVSKIA** S.Y. Kondr. & Kärnefelt (Arup et al. 2013)

**elegans** (Link) S. Y. Kondr. & Kärnefelt Syns.: *Caloplaca elegans*, *C. splendens*, *Placodium elegans*, *Xanthoria elegans*

**papillifera** (Vainio) S. Y. Kondr. & Kärnefelt Syn.: *Xanthoria papillifera*

**sorediata** (Vainio) S. Y. Kondr. & Kärnefelt Syns.: *Caloplaca sorediata*, *Xanthoria sorediata*

**SACCOMORPHA** Elenkin = **PLACYNTHIELLA**

**hyporhoda** (Th. Fr.) Clauzade & Cl. Roux = *Placynthiella hyporhoda*

**icmalea** (Ach.) Clauzade & Cl. Roux = *Placynthiella icmalea*

**oligotropha** (J. R. Laundon) Clauzade & Cl. Roux = *Placynthiella oligotropha*

**uliginosa** (Schrader) Hafellner = *Placynthiella uliginosa*

**SAGEDIA** Ach. (Nordin et al. 2010)

**mastrucata** (Wahlenb.) A. Nordin, Savić & Tibell Syns.: *Aspicilia mastrucata*, *Lecanora mastrucata*

**simoënsis** (Räsänen) A. Nordin, Savić & Tibell Syn: *A. simoënsis*

**cestrensis** (Tuck.) Tuck. (Mohr 1901) = *Pseudosagedia cestrensis*

**SAGEDIOPSIS** (Sacc.) Vainio

\***aquatica** (Stein) Triebel (Brodo 1995)

\***barbara** (Th. Fr.) R. Sant. & Triebel Syn.: *Gongylia nadvornikii*

\***campsteriana** (Lindsay) D. Hawksw. & R. Sant. Syn.: *Metasphaeria tartarina*

\***lomnitzensis** (Stein) Orange (Spribille et al. 2010)

**SAGIOLECHIA** A. Massal.

**protuberans** (Ach.) A. Massal.

**rhexoblephara** (Nyl.) Zahlbr.

**SANGUINOTREMA** Lücking

**wightii** (Taylor) Lücking Syn.: *Leptotrema wightii*, *Myriotrema wightii*, *Thelotrema ravenelii*, *T. wightii* (Lücking et al. 2015)

**SANTESSONIELLA** Henssen (Henssen 1997)

**arctophila** (Th. Fr.) Henssen var. **arctophila** Syn.: *Parmeliella arctophila* (Henssen 1997)

**crossophylla** (Tuck.) P. M. Jørg. Syns.: *Parmeliella crossophylla*, *Pannaria crossophylla* (Jørgensen 2000c, 2005)

**grisea** (Hue) Henssen (Tønsberg & Henssen 1999)

**saximontana** T. Sprib., P. M. Jørg. & M. Schultz (Spribille et al. 2007) = *Leciophysma saximontana* (Ekman et al. 2014)

**SARCOGRAPHA** Fée

**labyrinthica** (Ach.) Müll. Arg.

**medusulina** (Nyl.) Müll. Arg.

**tricosa** (Ach.) Müll. Arg.

**intricans** (Nyl.) Müll. Arg. = *Phaeographis intricans*

**SARCOGYNE** Flotow

**albothallina** K. Knudsen, T. B. Wheeler, Kocourk. & M. Westb. (Knudsen et al. 2016)

**arenosa** (Herre) Knudsen & S. M. Standley (Knudsen 2005b) Syn.: *Acarospora arenosa*

**clavus** (DC.) Kremp. Syn.: *Biatorella clavus*

**crustacea** K. Knudsen & Kocourk. (Knudsen & Kocourková 2010a) Syn.: *Biatorella terrena*

**dakotensis** H. Magn.

**desolata** (H. Magn.) K. Knudsen & Standley Syn.: *Acarospora desolata* (Knudsen & Standley 2007)

**hypophaea** (Nyl.) Arnold Syn.: *Biatorella hypophaea* (Knudsen et al. 2013b)  
**integra** (B. de Lesd.) H. Magn.  
**magnussonii** B. de Lesd.  
**mitziae** K. Knudsen, Kocourk. & McCune (Knudsen et al. 2013a)  
**novomexicana** H. Magn.  
**plicata** H. Magn. (Knudsen & Kocourková 2009a, 2011) Syn.: *Biatorella plicata*  
**reebiae** K. Knudsen (Knudsen & Standley 2007)  
**regularis** Körber Syns.: *Biatorella pruinosa*  
**similis** H. Magn.  
**\*sphaerospora** J. Steiner (Lendemer et al. 2009b)  
**squamosa** K. Knudsen & McCune (Knudsen & McCune 2013)  
*athroocarpa* H. Magn. = *Acarospora badiofusca* (Knudsen & Kocourková 2013)  
**\*bicolor** H. Magn. = *Polysporina subfuscescens* (Knudsen & Kocourková 2008a)  
*bolleana* H. Magn. = *S. arenosa* (Lendemer et al. 2009c)  
*californica* H. Magn. = *S. similis* (Knudsen & Lendemer 2005a)  
*lapponica* (Ach. ex Schaerer) K. Knudsen & Kocourk. (Knudsen 2005c) N.A. reports are *Polysporina subfuscescens* (Knudsen & Kocourková 2008a)  
*oligospora* H. Magn. = *Polysporina gyrocarpa*  
*privigna* auct. = *S. hypophaea* (Knudsen et al. 2013b)  
*pruinosa* auct. = *S. regularis*  
*simplex* (Davies) Nyl. = *Polysporina simplex*

#### **SARCOPYRENIA** Nyl. (Harris 1995b)

**\*bacillosa** (Nyl. ex Hasse) Nav.-Ros. & Hladun Syns.: *Hassea bacillosa*, *Verrucaria bacillosa* (Navarro-Rosinés & Hladun 2004)  
**\*calcareia** Lendemer & R. C. Harris (Lendemer et al. 2013)  
**\*cylindrospora** (P. Crouan & H. Crouan) M. B. Aguirre (Harris 1995b)

#### **SARCOSAGIUM** A. Massal.

**campestre** (Fr.) Poetsch & Schiedem. Syn.: *Biatorella campestris*

#### **SAREA** Fr.

<sup>+</sup>**difformis** (Fr. ) Fr.  
<sup>+</sup>**resinae** (Fr.) Kuntze Syn.: *Biatorella resinae*

#### **SCHADONIA** Körber

**alpina** Körber Syns.: *Lopadium alpinum*, *L. gemellum*  
**fecunda** (Th. Fr.) Vězda & Poelt Syn.: *Lopadium fecundum*

#### **SCHAERERIA** Körber

**brunnea** Björk, T. Sprib. & T. B. Wheeler (Spribille et al. 2009)  
**cinereorufa** (Schaerer) Th. Fr. Syn.: *Lecidea cinereorufa*, *L. rugosa*  
**corticola** Muhr & Tønsberg  
**dolodes** (Nyl.) Schmull & T. Sprib. (Schmull & Spribille 2005)  
**endocyanea** (Stirton) Hertel & Gotth. Schneider Syn.: *Lecidea epiiodiza*  
**fuscocinerea** (Nyl.) Clauzade & Cl. Roux Syns.: *Aspicilia quartzitica*, *Lecidea fuscocinerea*, *L. tenebrosa*  
<sup>#</sup>**parasemella** (Nyl.) Lumbsch Syns.: *Hafellnera parasemella*, *Lecidea parasemella* (Lumbsch 1997)  
*tenebrosa* (Flotow) Hertel & Poelt = *S. fuscocinerea*

#### **SCHISMATOMMA** Flotow & Körber ex A. Massal.

**glaucescens** (Nyl. ex Willey) R. C. Harris Syn.: *Arthonia glaucescens*  
**pericleum** (Ach.) Branth & Rostrup  
**rappii** (Zahlbr.) R. C. Harris Syn.: *Haematomma rappii*  
**rediunta** (Hasse) Tehler Syn.: *Dirina rediunta*  
**vernans** (Tuck.) Zahlbr.



abietinum (Humb.) A. Massal. = *S. pericleum*  
 californicum (Tuck.) Zahlbr. = *Sigridia californica*  
 cupressum Herre = *Dendrographa franciscana*  
 decolorans (Turner & Borrer ex Sm.) Clauz. & Vězda = *Dendrographa decolorans* (Ertz & Tehler 2011)  
 hypothallinum (Zahlbr.) Hasse = *Lecanographa hypothallina*  
 ocellatum (Nyl.) Zahlbr. = *Mazosia ocellata*  
 palidellum auct. = *Enterographa anguinella*  
 pluriloculare (Zahlbr.) Zahlbr. (Tehler 2002c) = *Paraschismatomma pluriloculare* (Ertz & Tehler 2011)  
 ravenelii (Tuck.) Zahlbr. = *Opegrapha ravenelii*  
 subattingens (Nyl.) Zahlbr. = *Lecanactis epileuca*

#### **SCHIZOPELTE** Th. Fr.

**californica** Th. Fr. Syn.: *Combea californica*  
**crustosa** Ertz & Tehler (Ertz & Tehler 2011) Syns.: *Chiodecton californicum*, *Llimonaea californica*, *Sclerophyton californicum*  
**parishii** (Hasse) Ertz & Tehler (Ertz & Tehler 2011)  
 lumbricoides (W. A. Weber) Ertz & Tehler (Ertz & Tehler 2011) Previously regarded as a synonym of *Hubbsia californica*, but when recognized as separate, it is known only from Mexico

#### **SCLEROCOCCUM** Fr.

\***montagnei** Hafellner (Diederich 2004a)  
 \***simplex** D. Hawksw. (Cole & Hawksworth 2001)  
 \***parmeliae** Etayo & Diederich (Kocourková & Knudsen 2009d) = *Cladophialophora parmeliae*

#### **SCLEROPHORA** Chevall.

**amabilis** (Tibell) Tibell (Goward et al. 1996)  
**coniophaea** (Norman) J.-E. Mattsson & Middelb. (Goward et al. 1996)  
**farinacea** (Chevall.) Chevall.  
**nivea** (Hoffm.) Tibell Syns.: *Coniocybe nivea* (Hoffm.) Arnold non Tuck. & Mont., *C. pallida*  
**peronella** (Ach.) Tibell (Goward et al. 1996)

#### **SCLEROPHYTON** Eschw.

**elegans** Eschw. Syns.: *Chiodecton inscriptum*, *Enterographa elegans* (Sparrius 2004b)  
**seriale** (Ach.) Sparrius (Seavey & Seavey 2014a)  
 californicum (Tuck.) Hasse = *Schizopelte crustosa*  
 cerebriforme Egea & Torrente = *Sparria cerebriformis*  
 inscriptum (Nyl.) Müll. Arg. = *S. elegans*  
 occidentale Herre = *Dactylospora* cf. *parasitica*, on a *Pertusaria* sp. (Sparrius 2004b)

#### **SCOLICIOSPORUM** A. Massal.

**abietinum** T. Sprib. (Spribille et al. 2009)  
**chlorococcum** (Stenh.) Vězda Syn.: *Bacidia chlorococca*  
**intrusum** (Th. Fr.) Hafellner Syn.: *Carbonea intrusa* (Hafellner 2004c)  
**pensylvanicum** R. C. Harris (Harris 2009)  
**pruinsum** (P. James) Vězda (Tønsberg 1997 [1998])  
**sarothamni** (Vainio) Vězda  
**umbrinum** (Ach.) Arnold Syn.: *Bacidia umbrina*  
**umbrinum** var. **compacta** (Körber) Vězda

#### **SCULPTOLUMINA** Marbach

**japonica** (Tuck.) Marbach Syn.: *Buellia japonica* (Giralt et al. 2009)

#### **SCUTULA** Tul.

\***cladoniicola** Alstrup & D. Hawksw. (Hansen & Alstrup 1995)  
 \***dedicata** Triebel, Wedin & Rambold (Triebel et al. 1997)  
 \***epiblastematica** (Wallr.) Rehm (Triebel et al. 1997)

- \***heeri** (Hepp.) Trevisan (Spribille et al. 2010)
- \***miliaris** (Wallr.) Trevisan
- \***stereocaulorum** (Anzi) Körber
- \***tuberculosa** (Th. Fr.) Rehm (Wedin et al. 2007)

#### SCYTINIUM (Ach.) Gray (Otálora et al. 2014)

- apalachense** (Tuck.) Otálora, P. M. Jørg. & Wedin Syns.: Collema apalachense, Leptogium apalachense
- aquale** (Arnold) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium aquale
- aragonii** (Otálora) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium aragonii
- californicum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium californicum
- callopismum** (A. Massal.) Otálora, P. M. Jørg. & Wedin Syns.: Collema callopismum, C. callopismum var. rhyarodes
- cellulosum** (P. M. Jørg. & Tønsberg) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium cellulosum
- contortum** (Sierk) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium contortum
- dactylinum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium dactylinum
- erectum** (Sierk) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium erectum
- fragrans** (Sm.) Ach. Syns.: Collema fragrans, C. microphyllum
- gelatinosum** (With.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium gelatinosum, L. scotinum, L. sinuatum
- imbricatum** (P. M. Jørg.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium imbricatum
- intermedium** (Arnold) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium intermedium
- juniperinum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium juniperinum
- kauaiense** (H. Magn.) Otálora, P. M. Jørg. & Wedin Syn.: Collema kauaiense
- lichenoides** (L.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium lacerum, L. lichenoides
- palmatum** (Hudson) Gray Syns.: Leptogium corniculatum, L. palmatum
- parculum** (Nyl.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium parculum
- platynum** (Tuck.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium platynum
- plicatile** (Ach.) Otálora, P. M. Jørg. & Wedin Syns.: Collema plicatile, Leptogium microdium, L. plicatile
- polycarpum** (P. M. Jørg. & Goward) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium polycarpum
- pulvinatum** (Hoffm.) Otálora, P. M. Jørg. & Wedin (McCune et al. 2014b)
- rivale** (Tuck.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium rivale, Polychidium rivale
- schraderi** (Bernh.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium schraderi
- siskiyouensis** (D. F. Stone & Ruchty) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium siskiyouensis
- subaridum** (P. M. Jørg. & Goward) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium subaridum
- subtile** (Schrader) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium minutissium, L. perminutum, L. subtile
- tacomae** (P. M. Jørg. & Tønsberg) McCune (McCune et al. 2014b) Syn.: Leptogium tacomae
- tenuissimum** (Dickson) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium lividofuscum, L. tenuissimum
- teretiusculum** (Wallr.) Otálora, P. M. Jørg. & Wedin Syns.: Leptogium intricatulum, L. teretiusculum
- turgidum** (Ach.) Otálora, P. M. Jørg. & Wedin Syn.: Leptogium turgidum

#### SECOLIGA Norman = GYALECTA

- carneoluteola (Tuck.) Müll. Arg. (Fink 1935) = Cryptolechia carneoluteola (Tuck.) Kalb Probable misidentification for North America (Esslinger & Tucker 2009)
- geoica (Wahlenb. ex Ach.) Körber = Gyalecta geoica

#### SEGESTRIA Fr. (Harris 1995a)

- lectissima** Fr. Syn.: Porina lectissima (Harris 1995a)
- leptalea** (Durieu & Mont.) R. C. Harris Syn.: Porina leptalea (Harris 1995a)
- mammillosa** Th. Fr. Syn.: Porina mammillosa (Harris 1995a)
- octomera** (Müll. Arg.) R. C. Harris (Harris 1995a)
- rubentior** (Stirton) R. C. Harris (Harris 1995a)
- nucula Fr. (Mohr 1901) = Porina nucula



**SEIROPHORA** Poelt (Frödén & Lassen 2004)

**aurantiaca** (R. Br.) Frödén Syn.: *Teloschistes arcticus* (Frödén & Lassen 2004)

**californica** (Sipman) Frödén Syn.: *Teloschistes californicus*

**contortuplicata** (Ach.) Frödén Syn.: *Teloschistes contortuplicatus*

**SIGRIDEA** Tehler

**californica** (Tuck.) Tehler Syn.: *Dirina californica*, *D. hassei*, *Platygrapha californica*, *Schismatomma californicum*

**SILOBIA** M. Westb. & Wedin (Westberg et al. 2011a) = **MYRIOSPORA** Nägeli ex Uloth (Arcadia & Knudsen 2012)

**hassei** (Herre) K. Knudsen (Knudsen 2011b) = *Myriospora hassei* (Arcadia & Knudsen 2012)

**rhagadiza** (Nyl.) M. Westb. (Westberg et al. 2011a) = *Myriospora rhagadiza* (Arcadia & Knudsen 2012)

**scabrida** (H. Magn.) M. Westb. (Westberg et al. 2011a) = *Myriospora scabrida* (Arcadia & Knudsen 2012)

**smaragdula** (Wahlenb.) M. Westb. & Wedin (Westberg et al. 2011a) = *Myriospora smaragdula* (Arcadia & Knudsen 2012)

**SIPHULA** Fr.

**ceratites** (Wahlenb.) Fr.

**dactyliza** Nyl. = *a Stereocaulon* spp. (Kantvilas 2002)

**simplex** (Taylor) Nyl. = *S. ceratites*

**SKYTTEA** Sherwood, D. Hawksw. & Coppins

\***caesii** Diederich & Etayo (Diederich & Etayo 2000)

\***cismonicae** Hafellner (Hafellner 2000)

\***dacampiae** Zhurb. (Zhurbenko 2013)

\***elachistophora** (Nyl.) Sherwood & D. Hawksw.

\***gregaria** Sherwood, D. Hawks. & Coppins (Diederich & Etayo 2000)

\***insignis** Driscoll, S. R. Clayden & R. C. Harris (Driscoll et al. 2016)

\***lecanorae** Diederich & Etayo (Diederich & Etayo 2000)

\***mayrhoferi** Diederich & Etayo (Diederich & Etayo 2000)

\***nitschkei** (Körber) Sherwood, D. Hawks. & Coppins (Diederich & Etayo 2000)

\***pertusariicola** Diederich & Etay (Diederich & Etayo 2004b)

\***radiatilis** (Tuck.) R. Sant., Etayo & Diederich (Diederich & Etayo 2000)

\***richardsonii** Iturr. & D. Hawksw. (Iturriaga & Hawksworth 2004)

\***tavaresae** R. Sant., Etayo & Diederich (Diederich & Etayo 2000)

\***tephromelarum** Kalb & Hafellner (Diederich & Etayo 2004b)

**SKYTTELLA** D. Hawksw. & R. Sant.

\***mulleri** (Willey) D. Hawksw. & R. Sant.

**SOLENOPSORA** A. Massal.

**candicans** (Dickson) J. Steiner

**cladonioides** B. D. Ryan & Timdal (Ryan & Timdal 2002, 2011)

**crenata** (Herre) Zahlbr.

**cyathiformis** (Szatala) van den Boom Syn.: *Lecania cyathiformis* (van den Boom & Ryan 2004b)

**holophaea** (Mont.) Samp. Syn.: *Lecanora holophaea*, *Candelariella holophaea*

**hassei** (Zahlbr.) Zahlbr. = *Lecania hassei* (Zahlbr.) W. Noble

**SOLITARIA** Arup, Söchting & Frödén (Arup et al. 2013)

**chrysophthalma** (Degel.) Arup, Söchting & Frödén Syn.: *Caloplaca chrysophthalma*

**SOLORINA** Ach.

**bispora** Nyl.

**bispora** var. **subspungiosa** (Zschacke) Frey (Zhurbenko et al. 2006)

**crocea** (L.) Ach.  
**monospora** Gyelnik (McCune et al. 2014b)  
**octospora** (Arnold) Arnold  
**saccata** (L.) Ach.  
**spongiosa** (Ach.) Anzi

**SOLORINARIA** (Vainio) Gyelnik  
**despreauxii** (Mont.) Fink = *Heppia despreauxii*

**SOLORINELLA** Anzi = **GYALIDEA** (Aptroot & Lücking 2003)  
**asteriscus** Anzi = *Gyalidea asteriscus* (Aptroot & Lücking 2003)

**SPARRIA** Ertz & Tehler (Ertz & Tehler 2011)  
**cerebriformis** (Egea & Torrente) Ertz & Tehler Syn.: *Llimonaea cerebriformis*, *Sclerophyton cerebriforme*

**SPEERSCHNEIDERA** Trevisan  
**euploca** (Tuck.) Trevisan Syn.: *Teloschistes euplocus*

**SPHAERELLOTHECIUM** Zopf

\***abditum** Triebel  
\***araneosum** (Rehm ex Arnold) Zopf  
\***atryneae** (Arnold) Cl. Roux & Triebel (Hafellner et al. 2002)  
\***breussii** K. Knudsen, Kocourk. & Etayo (Knudsen, Kocourková & Etayo 2009)  
\***cladoniae** (Alstrup & Zhurb.) Hafellner (Knudsen & Kocourková 2010b)  
\***cladoniicola** E. S. Hansen & Alstrup (Hansen & Alstrup 1995)  
\***coniodes** (Nyl.) Cl. Roux & Diederich (Hodkinson et al. 2009)  
\***contextum** Triebel  
#**gowardii** Alstrup & M. S. Cole (Alstrup & Cole 1998)  
\***minutum** Hafellners  
\***parmeliae** Diederich & Etayo (Diederich 2003)  
\***propinquellum** (Nyl.) Cl. Roux & Triebel Syn.: *Stigmidium congestum* (for North America)  
\***reticulatum** (Zopf) Etayo Syn.: *Echinothecium reticulatum* (Kocourková et al. 2008)  
\***stereocaulorum** Zhurb. & Triebel (Zhurbenko 2010)  
\***thamnoliae** Zhurb. (Zhurbenko 2012)  
\**araneosum* var. *cladoniae* Alstrup & Zhurb. (Zhurbenko & Alstrup 2004) = *S. cladoniae*

**SPHAERIA** Haller = **HYPOXYLON**  
**bignoniae** Schwein. = *Granulopyrenis hymnothora*

**SPHAEROPEZIA** Sacc. (Baloch et al. 2013b)

\***bryoriae** (Diederich & Etayo) Baloch & Wedin Syn.: *Odontotrema intermedia*  
\***cucularis** (Norman) Baloch & Wedin Syn.: *Lethariicola cuculuris*  
\***intermedia** (Diederich, Zhurb. & Etayo) Baloch & Wedin Syn.: *Odontotrema intermedium*  
\***lecanorae** (Diederich & G. Marson) Baloch & Wedin Syn.: *Odontotrema lecanorae*  
\***melaneliae** (Diederich & Zhurb.) Baloch, Gilenstam & Wedin Syn.: *Odontotrema melaneliae*  
\***mycoblasti** Diederich, Baloch & Wedin (Baloch et al. 2013b)  
\***ochrolechia** (Diederich, Holien & Zhurb.) Baloch & Wedin Syn.: *Odontotrema ochrolechia*  
\***santessonii** (Zhurb., Etayo & Diederich) Baloch & Wedin Syn.: *Odontotrema santessonii*  
\***sipei** (Grumann) Baloch & Wedin Syn.: *Lethariicola sipei*, *Odontotrema sipei*  
\***thamnoliae** (Zhurb., Diederich & Etayo) Baloch & Wedin Syn.: *Odontotrema thamnoliae*

**SPHAEROPHORUS** Pers.

**fragilis** (L.) Pers.  
**globosus** (Hudson) Vainio  
**tuckermanii** Räsänen (Wedin et al. 2009)



**venerabilis** Wedin, Högnabba & Goward (Wedin et al. 2009)  
**globiferus** (L.) D.C. var. **gracilis** Müll. Arg. = *S. tuckermanii* (Wedin et al. 2009)  
**globosus** var. **gracilis** auct. = *S. tuckermanii*  
**melanocarpus** (Sw.) DC. = *Bunodophoron melanocarpus*

#### **SPHAERULINA** Sacc.

\***dolichotera** (Nyl.) Vouax (Esslinger & Egan 1995)

#### **SPHINCTRINA** Fr.

\***anglica** Nyl. Syn.: *Mycocalicium microcephalum*, *Calicium microcephalum*  
\***benmargana** Selva (Selva 2004)  
\***leucopoda** Nyl.  
\***pallidella** (Willey) Selva (Selva 2004)  
\***tubaeformis** A. Massal.  
\***turbinata** (Pers. : Fr.) De Not. Syn.: *Calicium turbinatum*  
\***gelasinata** (With.) Zahlbr. (Fink 1935) = *S. turbinata* (Santesson et al. 2004)  
\***microcephala** (Sm.) Körber = *S. anglica*  
\***microcephala** Nyl. = *S. tubaeformis*

**SPHINCTRINELLA** Nádv. = **MYCOCALICIUM**  
**calicioides** Nádv. = *Mycocalicium calicioides*

#### **SPILONEMA** Bornet

**americanum** (Henssen & Tønsberg) T.Sprib., Muggia & Tønsberg Syn.: *Spilonemella americana* (Spribille et al. 2014b)  
**paradoxum** Bornet  
**revertens** Nyl.  
**dendroides** Henssen = *Erinacellus dendroides* (Henssen) T. Sprib., Muggia & Tønsberg (Spribille et al. 2014b)

**SPILONEMELLA** Henssen & Tønsberg (Henssen & Tønsberg 2000)  
**americana** Henssen & Tønsberg = *Spilonema americanum* (Spribille et al. 2014b)

#### **SPIROGRAPHA** Zahlbr.

\***fusisporella** (Nyl.) Zahlbr. (Alstrup & Cole 1998)

#### **SPORASTATIA** A. Massal.

**polyspora** (Nyl.) Grumann  
**testudinea** (Ach.) A. Massal. Syn.: [Biatorella kulshanensis](#), *B. testudinea*  
**cinerea** (Schaerer) Körber = *S. polyspora*

#### **SPORODICTYON** A. Massal.

**cruentum** (Körber) Körber Syn.: *Polyblastia cruenta* (Fryday 2006, Savić & Tibell 2009, Spribille et al. 2010)  
**minutum** Savić & Tibell (McCune et al. 2014b)  
**terrestre** (Th. Fr.) Savić & Tibell Syn. : *Polyblastia terrestris* (Savić & Tibell 2009), *Verrucaria obtenta* (Dillman et al. 2012)

#### **SPORODOPHORON** Frisch, Y. Ohmura, Ertz & G. Thor (Frisch et al. 2015)

**americanum** (Lendemer, E. Tripp & R. C. Harris) Ertz & Frisch (Frisch et al. 2015)

#### **SPOROPodium** Mont.

**marginatum** Lücking & Lumbsch (Lücking et al. 2011b)  
**phyllocharis** (Mont.) A. Massal.

**SPOROSTIGMA** Grube

**melasporum** (Tuck.) Grube Syn. *Arthonia melaspora* (Grube 2001)

**SQUAMARINA** Poelt

**cartilaginea** (With.) P. James

**lentigera** (Weber) Poelt Syn.: *Lecanora lentigera*

**crassa** (Hudson) Poelt = *S. cartilaginea*

**degelii** Poelt = *Lecanora neodegelii*

**SQUAMULEA** Arup, Söchting & Frödén (Arup et al. 2013)

**galactophylla** (Tuck.) Arup, Söchting & Frödén Syn.: *Caloplaca galactophylla*, *Placodium galactophylla*

**parviloba** (Wetmore) Arup, Söchting & Frödén Syn.: *Caloplaca parviloba*

**squamosa** (B. de Lesd.) Arup, Söchting & Frödén Syn.: *Caloplaca squamosa*

**subsoluta** (Nyl.) Arup, Söchting & Frödén Syn.: *Caloplaca irrubescens*, *C. modesta*, *C. subsoluta*

**STAUROLEMMMA** Körber

**carolinianum** P. M. Jørg. (Jørgensen 2004)

**STAUROTHELE** Norman

**arctica** Lynge

**areolata** (Ach.) Lettau

**bacilligera** (Arnold) Arnold (Lendemer 2008)

**clopimoides** (Bagl. & Carestia) J. Steiner

**discedens** (Nyl.) Zahlbr.

**drummondii** (Tuck.) Tuck. Syn.: *Endocarpon drummondii*, *E. wilmsoides*

**effigurata** J. W. Thomson

**elenkinii** Oxner

**fissa** (Taylor) Zwackh

**frustulenta** Nyl. (McCune et al. 2014b)

**guestphalica** (Lahm ex Körber) Arnold (Lendemer 2008)

**lecideoides** B. de Lesd.

**monicae** (Zahlbr.) Wetmore Syn.: *Endocarpon monicae*

**orispruinosa** J. W. Thomson

**polygonia** B. de Lesd.

**rugosa** J. W. Thomson

**rupifraga** (A. Massal.) Arnold Syn. : *Verrucaria terebrata*

**verruculosa** J. W. Thomson

*ambrosiana* (A. Massal.) Zschacke = *S. drummondii* for North American records

*circinata* Tuck. = *S. fissa*

*catalepta* auct. N. Am. = mostly *S. monicae*

*clopima* (Wahlenb.) Th. Fr. [epithet to be proposed for rejection under I.C.B.N. Art.69 (Thomson 1991)] = *S. drummondii*

*diffractella* (Nyl.) Tuck. = *Endocarpon diffractellum*

*fuscocuprea* (Nyl.) Zschacke = *S. drummondii*

*glacialis* Herre = *S. fissa*

*hazslinskyi* (Körber) J. Steiner = *S. fissa*

*hymenogonia* (Nyl.) Th. Fr. = *S. discedens* for North American records

*perradiata* Lynge = *S. drummondii*

*rufa* (A. Massal.) Zschacke = *S. elenkinii* for North American records

*sessilis* H. Magn. = *S. elenkinii*

*succedens* (Rehm) Arnold = *S. drummondii* for North American record

*tenuissima* Degel. = *Endocarpon tenuissimum*

*umbrina* (Wahlenb.) Hellb. = *S. fissa*

**STEGOBOLOUS Mont.**

**aubertianus** (Mont.) A. Frisch & Kalb Syns.: *Leptotrema aubertianum*, *Ocellularia auberiana* (Frisch & Kalb 2006)

*emersus* (Kremp.) Frisch & Kalb = *Rhabdodiscus emersus* (Rivas Plata et al. 2012)

*granulosus* (Tuck.) A. Frisch = *Rhabdodiscus granulosus* (Rivas Plata et al. 2012)

**STEINEROPSIS T. Sprib. & Muggia (Spribille et al. 2010)**

**alaskana** T. Sprib. & Muggia (Spribille et al. 2010)

**STEINIA Körber**

**geophana** (Nyl.) Stein Syns.: *Lecidea geophana*, *Biatorella geophana*

**STENOCYBE (Nyl.) Körber**

<sup>+</sup>**clavata** Tibell

<sup>+</sup>**flexuosa** Selva & Tibell (Selva & Tibell 1999)

<sup>+</sup>**fragmenta** E. B. Peterson & Rikkinen (Peterson & Rikkinen 1998)

<sup>+</sup>**major** Nyl. ex Körber

<sup>+</sup>**pullatula** (Ach.) Stein

<sup>+</sup>*byssacea* (Fr.) Körber = *S. pullatula*

<sup>+</sup>*euspora* (Nyl.) Anzi = (?) *S. major*

<sup>+</sup>*minutissima* (G. Merr.) Zahlbr. = *Phaeocalicium minutissimum*

<sup>+</sup>*tremulicola* Norrlin ex Nyl. = *Phaeocalicium tremulicola*

**STEREOCAULON Hoffm.**

**alpinum** Laurer ex Funck

**apocalypticum** Nyl

**arcticum** Lynge

**arenarium** (Savicz) I. M. Lamb

**botryosum** Ach.

**capitellatum** H. Magn.

**condensatum** Hoffm.

**coniophyllum** I. M. Lamb

[**Siphula dactyliza** Nyl.] (Kantvilas 2004)

**dactylophyllum** Flörke

**dactylophyllum** var. **occidentale** (H. Magn.) I. M. Lamb

**depreaultii** Delise ex Nyl.

**depressum** (Frey) I. M. Lamb (Zhurbenko et al 2006)

**glareosum** (Savicz) H. Magn.

**glaucescens** Tuck.

**glaucescens** var. **caespitosulum** (Nyl.) I. M. Lamb

**grande** (H. Magn.) H. Magn.

**groenlandicum** (E. Dahl) I. M. Lamb

**incrustatum** Flörke

**intermedium** (Savicz) H. Magn.

**klondikense** T. Sprib. (Spribille et al. 2010)

**leucophaeopsis** (Nyl.) P. James & Purvis (Fryday 2010)

**leprocephalum** Vainio

**microcarpum** Müll. Arg.

**myriocarpum** Th. Fr.

**nanodes** Tuck.

**nivale** (Follmann) Fryday Syn.: *Bacidia nivalis* (Fryday & Glew 2003)

**octomerum** Müll. Arg.

**paschale** (L.) Hoffm.

**pileatum** Ach.

**plicatile** (Leighton) Fryday & Coppins (Fryday 2006)

**rivulorum** H. Magn.



**sasakii** Zahlbr. var. **simplex** (Riddle) I. M. Lamb  
**sasakii** var. **tomentosoides** I. M. Lamb  
**saviczii** Du Rietz  
**saxatile** H. Magn.  
**spathuliferum** Vainio  
**sterile** (Savicz) I. M. Lamb ex Krog  
**subcoralloides** (Nyl.) Nyl.  
**subdenudatum** Hav. (Spribille et al. 2010)  
**symphycheilum** I. M. Lamb  
**taeniarum** (H. Magn.) Kivistö (Kivistö 1998)  
**tennesseense** H. Magn. ex Degel.  
**tennesseense** H. Magn. ex Degel. var. **nigrofastigiatum** I. M. Lamb  
**tomentosum** Fr.  
**vesuvianum** Pers.  
albicans Th. Fr. = *Lepraria albicans*  
arbuscula Nyl. = *Lepraria arbuscula*  
coralloides Fr. = *S. dactylophyllum*  
denudatum Flörke = *S. vesuvianum*  
evolutoides (H. Magn.) Frey = *S. saxatile*  
microscopicum (Vill.) Frey = *Leprocaulon quisquiliare*, but N.A. records are *L. americanum*  
pseudoarbuscula Asahina = *Lepraria subalbicans* for North American records  
quisquiliare (Leers) Hoffm. = *Leprocaulon quisquiliare*, but N.A. records are *L. americanum*  
ramulosum Raeuschel = not in North America north of Mexico  
subalbicans I. M. Lamb = *Lepraria subalbicans*  
uliginosum I. M. Lamb Known from Greenland but not from the United States or Canada.  
wrightii Tuck. = not in North America

#### **STICTA** (Schreber) Ach.

**arctica** Degel.  
**beauvoisii** Delise  
**canariensis** (Bory) Bory ex Delise  
**carolinensis** T. McDonald (McDonald et al. 2003)  
**deyana** Lendemer & Goffinet ([Lendemer & Goffinet 200015](#))  
**fragilinata** T. McDonald (McDonald et al. 2003)  
**fuliginosa** (Hoffm.) Ach.  
**leucoblephara** (Müll. Arg.) D. J. Galloway (Galloway & Thomas 2004)  
**limbata** (Sm.) Ach.  
**sylvatica** (Hudson) Ach.  
**xanthotropa** (Kremp.) D. J. Galloway (Galloway & Thomas 2004)  
amplissima (Scop.) Rabenh. (Fink 1935) = *Lobaria amplissima*  
anthraspis Ach. = *Lobaria anthraspis*  
aurata Ach. = *Crocodia aurata*  
crocata (L.) Ach. = *Pseudocyphellaria crocata*  
drummondii Taylor = *Nephroma resupinatum*  
erosa (Eschw.) Tuck. = *Lobaria ravenelii*  
glomulifera (Lightf.) Delise = *Lobaria amplissima*  
hallii Tuck. = *Lobaria hallii*  
herbacea (Hudson) Ach. = misidentification for North America  
laciniata Ach. = misidentification for North America  
linita Ach. = *Lobaria linita*  
oregana Tuck. = *Lobaria oregano*  
oroborealis Goward & Tønsberg (Tønsberg & Goward 2001) = *Dendriscosticta oroborealis* (Moncada et al. 2013)  
pulmonaria (L.) Birolì = *Lobaria pulmonaria*  
quercizans (Michaux) Ach. (Fink 1935) = *Lobaria quercizans*  
verrucosa (Hudson) Fink = *Lobaria scrobiculata*

weigeli (Ach.) Vainio = misidentification for North America  
wrightii Tuck. = Dendriscosticta wrightii (Moncada et al. 2013)

#### STICTIS Pers.: Fr.

**urceolatum** (Ach.) Gilenstam Syn.: Conotrema urceolatum (Wedin et al. 2005)

#### STIGMIDIUM Trevisan

- \***beringicum** Zhurb. & Triebel (Zhurbenko 2010)
- \***californicum** K. Knudsen & Kocourk. (Knudsen & Kocourková 2010f)
- \***cerinae** Cl. Roux & Triebel (Cole & D. Hawksworth 2001)
- \***congestum** (Körber) Triebel (Driscoll et al. 2016) An earlier N.A. report was based on *Sphaerellothecium propinquellum* (Esslinger & Egan 1995)
- \***conspurcans** (Th. Fr.) Triebel & R. Sant. (Spribille et al. 2010)
- \***croceae** (Arnold) Cl. Roux & Triebel (Zhurbenko & Daniëls 2003)
- \***ephebes** (Henssen) D. Hawksw. Syn.: Pharcidia ephebes (Henssen) D. Hawksw.
- \***epistigmellum** (Nyl. ex Vouaux) Kocourk. & K. Knudsen (Kocourková & Knudsen 2009c)
- \***epixanthum** Hafellner (Hafellner et al. 2002)
- \***frigidum** (Sacc.) Alstrup & D. Hawksw.
- \***fuscatae** (Arnold) R. Sant.
- \***glebarum** (Arnold) Hafellner (Etayo & Breuss 1998)
- \***gyrophorarum** (Arnold) D. Hawksw. (Hafellner et al. 2002)
- \***hesperium** Kocourk., K. Knudsen, & Diederich (Kocourková & Knudsen 2009b)
- \***lendemerii** Kocourk. & K. Knudsen (Kocourková et al. 2012, Kocourková & Knudsen 2012)
- \***marinum** (Deakin) Swinscow
- \***microcarpum** Alstrup & J. C. David (Zhurbenko 2009b)
- \***mitchelii** Cl. Roux & Bricaud (Zhurbenko 2013)
- \***mycobilimbiae** Cl. Roux, Triebel & Etayo (Diederich 2003)
- \*[**Pharcidia parva** Henssen]
- \***peltideae** (Vainio) R. Sant. (Alstrup & Cole 1998)
- \***pseudopeltideae** Cl. Roux & Triebel (Diederich 2003; Zhurbenko & Laursen 2003)
- \***psorae** (Anzi) Hafellner
- \***pumilum** (Lettau) Matzer & Hafellner (Cole & D. Hawksworth 2001)
- \***ramalinae** (Müll. Arg.) Etayo & Diederich (Kocourková et al. 2010)
- \***schaereri** (A. Massal.) Trevisan (Reinstated for N.Am. by Henssen 1995)
- \***solorinarium** (Vainio) D. Hawksw. (Zhurbenko 2009a)
- \***squamariae** (B. de Lesd.) Cl. Roux & Triebel
- \***stygnospilum** (Minks ) R. Sant. (McCune et al. 2014b)
- \***tabacinae** (Arnold) Triebel
- \***xanthoparmeliarum** Hafellner (Kocourková & Knudsen 2008)
- \***atryneae** (Arnold) Hafellner = *Sphaerellothecium atryneae*, but North American specimens are *Stigmidium squamariae*
- \***schaereri** (A. Massal.) Trevisan = misidentification for North America

#### STIRTONIA A. L. Sm.

- [**Arthonia alba** Müll. Arg.]
- byssoides** F. Seavey & J. Seavey (Seavey & Seavey 2015)
- coei** F. Seavey & J. Seavey (Seavey & Seavey 2015)
- dubia** A. L. Smith (Lücking et al. 2011b)
- latispora** F. Seavey & J. Seavey (Seavey & Seavey 2015)
- macrocarpa** Makhija & Patw. (Lücking et al. 2011b)

#### STRANGOSPORA Körber

- deplanata** (Almq.) Clauz. & Cl. Roux (Knudsen 2007c)
- microhaema** (Norman) R. A. Anderson Syn.: *Biatorella microhaema*
- moriformis** (Ach.) Stein Syn.: *Biatorella moriformis*

**pinicola** (A. Massal.) Körber  
**ochrophora** (Nyl.) R. A. Anderson = *Piccolia ochrophora*

#### **STRIGULA** Fr.

**americana** R. C. Harris Syn.: *Arthopyrenia tenuis*  
**bermudana** (Nyl.) R. C. Harris (Harris 1995a)  
**complanata** (Fée) Mont.  
**connivens** R. C. Harris (Harris 1995a)  
**griseonitens** R. C. Harris (Harris 1995a)  
**hypothallina** R. C. Harris (Harris 1995a)  
**jamesii** (Swinscow) R. C. Harris Syn.: *Arthopyrenia affinis* auct.  
**laceribracae** R. C. Harris (Harris 1995a)  
**nitidula** Mont.  
**orbicularis** Fr. (Lücking et al. 2011b)  
**phaea** (Ach.) R. C. Harris  
**schizospora** R. Sant. (Lücking et al. 2011b)  
**smaragdula** Fr. : Fr. (Harris 1995a)  
**stigmatella** (Ach.) R. C. Harris Syn.: *Arthopyrenia faginea*, *Porina cinerea*, *P. faginea*  
**subelegans** Vainio (Harris 1995a)  
**submuriformis** (R. C. Harris) R. C. Harris Syn.: *Arthopyrenia submuriformis*  
**viridiseda** (Nyl.) R. C. Harris Syn.: *Porina viridiseda*  
**wilsonii** (Riddle) R. C. Harris  
*affinis* (A. Massal.) R. C. Harris = *S. jamesii* for North American records  
*elegans* (Fée) Müll. Arg. = *S. smaragdula* (Harris 1995a)  
*sychnogonioides* (Nitschke) R. C. Harris = *Geisleria sychnogonioides*

#### **STROMATELLA** Henssen

**bermudana** (Riddle) Henssen (Schultz 2002e)

#### **SULCARIA** Bystrek

**badia** Brodo & D. Hawksw.  
**isidiifera** Brodo  
**spiralifera** (Brodo & D. Hawksw.) Myllys, Velmala & Goward (Myllys et al. 2014) Syn.: *Bryoria pseudocapillaris*, *B. spiralifera*

#### **SULCOPYRENULA** H. Harada

**canellae-albae** (Fée) H. Harada Syn.: *Anthracotheceum carellae-albae* (Harada 1999)  
**staurospora** (Tuck.) H. Harada (Harada 1999)  
**subglobosa** (Riddle) Aptroot (Aptroot 2012)

#### **SYNALISSA** Fr.

**matogrossensis** (Malme) Henssen (Schultz 2002f)  
**ramulosa** (Hoffm.) Fr. Syn.: *Omphalaria symphorea* (McCune et al. 2014b)  
*melambola* Tuck. = *Metamelanea melambola*  
*symphorea* (Ach.) Nyl. = *S. ramulosa* (McCune et al. 2014b)  
*subnigra* (B. de Lesd.) Henssen = *Peccania subnigra*  
*texana* Tuck. = *Peccania texana*

#### **SYNCESIA** Taylor (Tehler 1996)

**byssina** (Vainio) Tehler  
**depressa** (Fée) Tehler  
**graphica** (Fr.) Tehler Syn.: *Chiodecton perplexum*  
**psaroleuca** (Nyl.) Tehler

#### **SYNECHOBLASTUS** Trevisan = **COLLEMA**

**aggregatus** ("Ach.") Th. Fr. = *Gabura fasciculare*



coccophorus (Tuck.) Fink (Fink 1935) = *Enchylium coccophorum*  
 cyrtaspis (Tuck.) Fink (Fink 1935) = *Enchylium conglomeratum* (var. *crassiusculum*, Degelius 1974)  
 fascicularis (L.) A. L. Smith (Fink 1935) = *Gabura fasciculare*  
 laciniatus (Nyl.) Fink (Fink 1935) = *Collema texanum* (Degelius 1974)  
 leptaleus (Tuck.) Fink (Fink 1935) = *Collema leptaleum*  
 leucocarpus (Hooker f. & Taylor) Müll. Arg. (Fink 1935) = *Collema leucocarpum* Hooker f. & Taylor,  
 misidentification for North America (Degelius 1974)  
 microptychius (Tuck.) Fink (Fink 1935) = *Collema leptaleum* (Degelius 1974)  
 nigrescens (Hudson) Trevisan (Fink 1935) = *Collema nigrescens*  
 ohioensis Fink (Fink 1935) = *Enchylium conglomeratum* (Degelius 1974)  
 rysssoleus (Tuck.) Fink (Fink 1935) = *Collema rysssoleum*  
 polycarpus (Hoffm.) Dalla Torre & Sarnth. = *Enchylium polycarpon*  
 pycnocarpus Nyl. = *Enchylium conglomeratum* (var. *crassiusculum*, Degelius 1974)  
 rupestris (Sw.) Trevisan = *Collema flaccidum*  
 texanus (Tuck.) Müll. Arg. = *Collema texanum*  
 wyomingensis Fink = *Enchylium polycarpon*

#### **SYZYGOSPORA** G. W. Martin (Diederich 1996)

- \***bachmannii** Diederich & M. S. Christ. (Diederich 1996)
- \***physciacearum** Diederich (Diederich 1996)

#### **SZCZAWINSKIA** A. Funk

- leucopoda** Holien & Tønsberg (Holien & Tønsberg 2002)
- tsugae** A. Funk Syn.: *Micarea clavopycnidiata* (Aptroot et al. 1997)

#### **TAENIOLELLA** S. Hughes

- \***beschiana** Diederich (Zhurbenko & Alstrup 2004)
- \***caespitosa** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- \***christiansenii** Alstrup & D. Hawksw. (Zhurbenko & Daniëls 2003)
- \***delicata** M. S. Christ. & D. Hawksw. (Diederich 2003)
- \***laevistipitata** M. S. Cole & D. Hawksw. (Cole & Hawksworth 2001)
- \***phaeophysciae** D. Hawksw. (Diederich 2003)
- \***rolfii** Diederich & Zhurb. (Diederich & Zhurbenko 2001)
- \***serusiauxii** Diederich (Diederich 2003)

#### **TALPAPELLIS** Alstrup & M. S. Cole

- \***peltigerae** Alstrup & M. S. Cole (Alstrup & Cole 1998)

#### **TAPELLARIA** Müll. Arg.

- albomarginata** Lücking (Lücking et al. 2011b)
- epiphylla** (Müll. Arg.) R. Sant. Syn.: *Lopadium phyllocharis*
- floridensis** Common & Lücking (Lücking et al. 2011b)
- granulosa** Lücking & Rivas Plata (Lücking et al. 2011b)
- malmei** R. Sant. (Lücking et al. 2011b)
- nana** (Fée) R. Sant.
- bilimbioides** R. Sant. Report based on *T. albomarginata* (Lücking et al. 2011b)

#### **TELOSCHISTES** Norman

- chrysophthalmus** (L.) Th. Fr.
- exilis** (Michaux) Vainio
- flavicans** (Sw.) Norman
- arcticus** Zahlbr. = *Seiophora aurantiaca*
- californicus** Sipman = *Seiophora californica*
- candelarius** (L.) Fink = *Polycauliona candelaria*
- concolor** (Dickson) Tuck. = *Candelaria concolor*
- contortuplicatus** (Ach.) Clauzade & Rondon = *Seiophora contortuplicata*

euplocus (Tuck.) Zahlbr. = Speerschneidera euploca  
lychneus (Ach.) Tuck. = Polycauliona candelaria  
parietinus (L.) Norman = Xanthoria parietina  
polycarpus (Hoffm.) Tuck. = Polycauliona polycarpa  
ramulosus Tuck. = Xanthoria ramulosa  
villosus auct. non (Ach.) Norman = T. californicus for North American records

#### **TEPHROMELA** M. Choisy

**atra** (Hudson) Hafellner Syn.: Lecanora atra  
**\*cerasina** (Müll. Arg.) Rambold & Triebel (Nash et al. 2004b)  
**nashii** Kalb (Nash et al. 2004b)  
aglaea (Sommerf.) Hertel & Rambold = Calvitimela aglaea  
“aglaeida” Nyl. = Calvitimela aglaea  
armeniaca (DC.) Hertel & Rambold = Calvitimela armeniaca  
testaceoatra (Vainio) Hertel & Rambold = Calvitimela testaceoatra

#### **TETRAMELAS** Norman

**chloroleucus** (Körber) A. Nordin Syn.: Buellia chloroleuca (Nordin 2004)  
**insignis** (Nägeli ex Hepp) Kalb Syn.: Buellia insignis (Nordin 2004)  
**papillatus** (Sommerf.) Kalb Syn.: Buellia papillata (Kalb 2004)  
**\*pulverulentus** (Anzi) A. Nordin & Tibell Syn.: Buellia pulverulenta, Diplotomma pulverulentum (Nordin & Tibell 2005)  
**terricolus** (A. Nordin) Kalb (Kalb 2004)  
**triphragmioides** (Anzi) A. Nordin & Tibell Syn.: Buellia triphragmioides (Nordin & Tibell 2005)  
geophilus (Flörke ex Sommerf.) Norman North American records reported to be T. terricolus (Nordin 1999, McCune et al. 2014b)

#### **TEUVOA** Sohrabi & S. Leavitt (Sohrabi et al. 2013a)

**junipericola** Sohrabi & S. Leavitt (Sohrabi et al. 2013a)

#### **TEXOSPORIUM** Nádv. ex Tibell & Hofsten

**sancti-jacobi** (Tuck.) Nádv. Syn.: Cyphelium sancti-jacobi

#### **THALLOLOMA** Trevisan

**anguiniforme** (Vainio) Staiger (Lendemer et al. 2009b)  
**anguinum** (Mont.) Trevisan Syn.: Graphina anguina (Staiger 2002, Tripp et al. 2010), Graphis inustula  
**cinnabarinum** (Fée) Staiger (Kocourková et al. 2010)  
**hypoleptum** (Nyl.) Staiger (Lendemer & Knudsen 2008b)

#### **THAMNOGALLA** D. Hawksw.

**\*crombiei** (Mudd) D. Hawksw.

#### **THAMNOLIA** Ach. ex Schaerer

**subuliformis** (Ehrh.) W. L. Culb.  
**vermicularis** (Sw.) Ach. ex Schaerer  
subvermicularis Asahina = T. subuliformis

#### **THECARIA** Fée

**quassiicola** Fée Syn.: Phaeographina quassiicola (Staiger 2002)

#### **THELENELLA** Nyl.

**brasiliensis** (Müll. Arg.) Vainio (Harris 1995a)  
**calicola** C. A. Morse (Morse 2016)  
**cinerascens** (Vainio) R. C. Harris (Harris 1995a)  
**fugiens** (Müll. Arg.) R. C. Harris (Harris 1995a) Syn.: Aspidothelium fugiens  
**geminipara** (Malme) R. C. Harris (Harris 1995a)

**harrisii** H. Mayrhofer  
**hassei** (Zahlbr.) H. Mayrhofer Syns.: *Microglaena hassei*, *M. sychnogonoides*  
**humilis** R. C. Harris (Harris 1995a)  
**inductula** (Nyl.) H. Mayrhofer Syns.: *Microglaena inductula*, *Polyblastiopsis inductula*  
**modesta** (Nyl.) Nyl. Syn.: *Microglaena subcorallina*  
**muscorum** (Fr.) Vainio var. **muscorum** Syn.: *Chromatochlamys muscorum* (Lendemer & Harris 2004)  
**muscorum** var. **octospora** (Nyl.) Coppins & Fryday Syn.: *Chromatochlamys muscorum* var. *octospora* (Fryday & Coppins 2004)  
**nubifera** C. A. Morse (Morse 2016)  
**pertusariella** (Nyl.) Vainio (Harris 1995a)  
**rappii** R. C. Harris (Harris 1995a)  
**sastreana** R. C. Harris (Harris 1995a)  
**sordidula** (Th. Fr.) H. Mayrhofer Syn.: *Microglaena sordidula*  
**sychnogonioides** (Zahlbr.) R. C. Harris (Harris 1995a)  
**weberi** H. Mayrhofer  
 americana (Knudsen & Lendemer) Aptroot (Aptroot & Schumm 2012) = *Trimmatothelopsis americana* (Knudsen & Lendemer 2016)  
 luridella (Nyl.) H. Mayrhofer (Harris 1995a) North American records are *T. nubifera* (Morse 2016)

THELIDIELLA Fink ex J. Hedrick  
 blastenicola Fink = a non-lichenized fungus

**THELIDIUM** A. Massal.  
**absconditum** (Hepp) Rabenh.  
**aeneovinosum** (Anzi) Arnold  
**areolatum** J. W. Thomson  
**decipiens** (Nyl.) Kremp.  
**fontigenum** A. Massal. Syns.: *Thelidium microbolum*, *Verrucaria microbola*  
**incavatum** Nyl. ex Mudd  
**microsporum** Lynge  
**minimum** (A. Massal. ex Körber) Arnold  
**minutulum** Körber  
**olivaceum** (Fr.) Körber  
**papulare** (Fr.) Arnold Syn.: *Verrucaria sprucei*  
**parvulum** Arnold  
**pyrenophorum** (Ach.) Mudd  
**transsylvanicum** Zschacke  
**velutinum** (Bernh.) Körber  
**zwackhii** (Hepp) A. Massal. (Harris & Lendemer 2005)  
 acrotellum Arnold = *T. minutulum*  
 circumspersellum (Nyl.) Zschacke North American record is *Porina linearis* (Nash 2002)  
 mesotropum (Nyl.) A. L. Sm. = *T. minutulum*  
 microbolum (Tuck.) Hasse = *T. fontigenum* (Orange 2009)  
 viride (Deak.) Zahlbr. (Fink 1935) = *T. pyrenophorum* (Santesson et al. 2004)

**THELIGNYA** A. Massal.  
**lignyota** (Wahlenb.) P. M. Jørg. & Henssen Syn.: *Porocyphus dispersus*

**THELOCARPON** Nyl. ex Hue  
**epibolum** Nyl.  
 \***epibolum** var. **epithallinum** (Leighton ex Nyl.) G. Salisb.  
**hassei** B. de Lesd.  
**impressellum** Nyl. (Dillman et al. 2012)  
**intermediellum** Nyl.  
**laureri** (Flotow) Nyl.  
 \***lichenicola** (Fuckel) Poelt & Hafellner (Hafellner et al. 2002)



**sphaerosporum** H. Magn. Syn.: Ahlesia sphaerospora  
**superellum** Nyl.  
albomarginatum Herre = Acarospora elevata  
epilithellum Nyl. = T. laureri  
fimicola Fink = T. intermediellum  
majusculum Nyl. = T. laureri  
prasinellum Nyl. = T. laureri

**THELOMMA** A. Massal.

**californicum** (Tuck.) Tibell Syn.: Cyphelium californicum, C. farlowii, C. andersonii  
**carolinianum** (Tuck.) Tibell Syn.: Acolium carolinianum, Cyphelium carolinianum  
**mammosum** (Hepp) A. Massal. Syn.: Cypheliopsis bolanderi  
**occidentale** (Herre) Tibell Syn.: Cyphelium occidentale. North American records of Cyphelium caliciforme probably belong here.  
**ocellatum** (Körber) Tibell  
**santessonii** Tibell

**THELOPSIS** Nyl.

**flaveola** Arnold  
**inordinata** Nyl.  
**isiaca** Stizenb.  
**melathelia** Nyl.  
**rubella** Nyl.  
subporinella Nyl. = T. isiaca

**THELOTREMA** Ach.

**adjectum** Nyl.  
**californicum** Tuck. Syn.: Phaeotrema californicum  
**circumscriptum** C. Knight (fide T. Lumbsch, see appendix)  
**defectum** Hale  
**dilatatum** (Müll. Arg.) Hale  
**eximium** R. C. Harris  
**floridense** R. C. Harris  
**halei** (Tuck. & Mont.) Zahlbr. Syn.: Myriotrema halei  
**lacteum** Kremp.  
**lathraeum** Tuck. Syn.: Ocellularia lathraea  
**lepadinum** (Ach.) Ach.  
**monospermum** R. C. Harris Syn.: Leptotrema lepadodes, L. monosporum auct.  
**pachysporum** Nyl. (Lücking et al. 2011b)  
**petractoides** P. M. Jørg. & Brodo (Purvis et al. 1995)  
**porinoides** Mont. & Bosch Syn.: Ocellularia floridensis  
**subtile** Tuck. Syn.: Ocellularia subtilis  
**suecicum** (H. Magn.) P. James (Esslinger & Egan 1995)  
alborosellum (Nyl.) Tuck. = Chapsa alborosella  
bahianum Ach. var. obturascens Nyl. = Ocellularia obturascens  
carneum Eckfeldt = Mazosia ocellata  
clandestinum Fée = Myriotrema clandestinum , but a misidentification for N. America  
domingense (Fée) Tuck. = Ocellularia domingensis, but a misidentification for N. America  
glauescens Nyl. = Leucodecton glauescens  
granulosum Tuck. = Rhabdodiscus granulosus  
heterosporum C. Knight ex F. M. Bailey = Reimnitzia santensis  
interpositum (Nyl.) Müll. Arg. = Ocellularia interposita, but a misidentification for North America  
leiomostomum Tuck. = Redingeria leiomostoma (Tuck.) A. Frisch, but a misidentification for North America (Frisch & Kalb 2006)  
leprocarpum (Nyl.) Tuck. = Chapsa leprocarpa  
monosporum auct. = T. monospermum for North American records

platycarpoides Tuck. (Harris 1995a) = Chapsa platycarpoides  
platycarpum Tuck. = Chapsa platycarpoides  
postpositum Nyl. = Ocellularia postposita  
praestans Müll. Arg. = Ocellularia praestans  
ravenelii Tuck. = [Sanguinotrema wightii](#)  
sanfordianum Zahlbr. = Ocellularia sanfordiana  
santense Tuck. = Reimnitzia santensis  
texanum Willey ex Nyl. = Trinathotrema stictideum  
wightii (Taylor) Nyl. = [Sanguinotrema wightii](#)

#### **THERMUTIS** Fr.

**velutina** (Ach.) Flotow

#### **THOLURNA** Norman

**dissimilis** (Norman) Norman

#### **THROMBIUM** Wallr.

**aoristum** (Nyl.) Arnold (Breuss 2002f)

**discordans** (Nyl.) Zahlbr.

**epigaeum** (Pers.) Wallr.

**mongolicum** H. Magn. = [misidentification for North America \(Morse & Ladd 2015\)](#)

#### **THYREA** A. Massal.

**confusa** Henssen (Henssen & Jørgensen 1990)

**girardii** (Durieu & Mont.) Bagl. & Carestia Syn.: Omphalaria girardii

demangeonii (Moug. & Mont.) Fink = Phylliscum demangeonii

nigritella Lettau = Lichinella nigritella

pulvinata auct. North American = T. confusa

pulvinata (Schaerer) A. Massal. = Gonohymenia iodopulchra (Croz.) Henssen, but not in North America

pyrenoides (Nyl.) Fink = Paulia pyrenoides

#### **TICHOTHECIUM** Flotow = **VERRUCARIA**

\*pygmaeum Körber = Muellerella pygmaea

\*zahlbrucknerella Henssen = Endococcus zahlbrucknerellae

#### **TOMASELLIA** A. Massal.

**americana** (Minks ex Willey) R. C. Harris

[**Mycoporellum difforme** (Minks) Fink]

**macularis** (Minks ex willey) R. C. Harris (Harris 1995a) Syn.: Cyrtidula macularis

californica (Zahlbr.) R. C. Harris = Mycoporum californicum

eschweileri (Müll. Arg.) R. C. Harris = Mycoporum eschweileri

esenbeckiana (Fée) Müll. Arg. = Melanotheca esenbeckiana, but a misidentification for N. America

lactea (Ach.) R. C. Harris = Mycoporum lactaeum

sparsella (Nyl.) R. C. Harris = Mycoporum sparsellum

#### **TOENSBERGIA** Bendiksby & Timdal (Bendiksby & Timdal 2013)

**leucococca** (R. Sant.) Bendiksby & Timdal Syn.: Pycnora leucococca

#### **TONINIA** A. Massal.

**alutacea** (Anzi) Jatta

**arctica** Timdal

**aromatica** (Turner) A. Massal.

**athallina** (Hepp) Timdal Syns.: Catillaria athallina, Kiliasia athallina

**bullata** (Meyen & Flotow) Zahlbr.

**candida** (Weber) Th. Fr.

**cinereovirens** (Schaerer) A. Massal.

**lutosa** (Ach.) Timdal Syn.: (?)*Catillaria crystallifera*  
**massata** (Tuck.) Herre  
**nashii** Timdal (Timdal 2002c)  
**opuntiioides** (Vill.) Timdal  
**pennina** (Schaerer) Gyelnik  
**philippea** (Mont.) Timdal Syn.: *Kiliasia philippea*, *Catillaria arctica*, *C. kansuensis*, *C. philippea*  
**physaroides** (Opiz) Zahlbr.  
**ruginosa** (Tuck.) Herre subsp. **ruginosa**  
**ruginosa** subsp. **pacifica** Timdal  
**sculpturata** (H. Magn.) Timdal Syn.: *Catillaria sculpturata*  
**sedifolia** (Scop.) Timdal  
**squalescens** (Nyl.) Th. Fr. (Coppins & Fryday 2006b) But misplaced here?  
**squalida** (Ach.) A. Massal.  
**subdiffracta** Timdal  
**\*subdispersa** (Nyl. ex Hasse) K. Knudsen Syn.: *Lecania subdispersa* (Knudsen & Lendemer 2007)  
**submexicana** B. de Lesd.  
**subnitida** (Hellbom) Hafellner & Türk (Hafellner & Türk 2001) Syn.: *Catillaria tristis*, *C. subnitida*, *Kiliasia tristis*  
**\*subtalparum** van den Boom (van den Boom 2004)  
**superioris** Timdal  
**taurica** (Szatala) Oxner (McCune et al. 2014b)  
**tristis** (Th. Fr.) Th. Fr. subsp. **tristis**  
**tristis** subsp. **arizonica** Timdal  
**tristis** subsp. **asiae-centralis** (H. Magn.) Timdal  
**tristis** subsp. **canadensis** Timdal  
**tristis** subsp. **scholanderi** (Lynge) Timdal Syn.: *Lecidea scholanderi*, *Psora scholanderi*  
**\*verrucarioides** (Nyl.) Timdal  
**weberi** Timdal  
*caulescens* Anzi = *T. squalida*  
*coeruleonigricans* auct. = *T. sedifolia*  
*coeruleonigricans* (Lightf.) Th. Fr. = *Pannaria praetermissa*, nom. rej. prop.  
*conglomerata* (Ach.) Boistel = *Psorinia conglomerata*  
*cumulata* (Sommerf.) Th. Fr. Excluded from *Toninia*; a misidentification for North America  
*kolax* Poelt = *T. verrucarioides*  
*lobulata* (Sommerf.) Lynge = *Bilimbia lobulata*  
*squarrosa* (Ach.) Th. Fr. = *T. squalida*  
*tabacina* auct. = *T. tristis*  
*talparum* Timdal = *T. subdispersa*

#### **TOPELIA** P. M. Jørg. & Vězda

**aperiens** P. M. Jørg. & Vězda  
**californica** P. M. Jørg. & Vězda  
**gyalectodes** (Nyl.) B. D. Ryan & H. T. Lumbsch Syn.: *Lecanora gyalectodes* (Ryan & Lumbsch 2007, Knudsen et al. 2008b)

#### **TOPELIOPSIS** Kantvilas & Vězda

**toensbergii** Vězda & Kantvilas (Kantvilas & Vězda 2000) = *Melanotopelia toensbergii*

#### **TORNABEA** Østh. (Nimis & Tretiach 1997)

**scutellifera** (With.) J. R. Laundon (Nimis & Tretiach 1997)

#### **TRAPELIA** M. Choisy

**coarctata** (Turner) M. Choisy Syn.: *Lecidea coarctata*  
**corticola** Coppins & P. James  
**glebulosa** (Sm.) J. R. Laundon Syn.: *Lecidea gregaria*, *L. ornata* (Laundon 2005)  
**obtegens** (Th. Fr.) Hertel Syn.: *Lecidea obtegens*



**placodioides** Coppins & P. James  
**stipitata** Brodo & Lendemer (Brodo & Lendemer 2015)  
 brujeriana (D. Dietr.) M. Choisy = *Ainoa mooreana*, but a misidentification for North America  
 involuta (Taylor) Hertel = *T. glebulosa*  
*mooreana* (Carroll) P. James = *Ainoa mooreana*, but a misidentification for North America (Brodo & Lendemer 2015)  
*torellii* (Anzi) Hertel = *Ainoa mooreana*, but a misidentification for North America

#### **TRAPELIOPSIS Hertel & Gotth. Schneider**

**aeneofusca** (Flotow) Coppins & P. James (Aptroot 1996)  
**bisorediata** McCune & Camacho (McCune et al. 2002)  
**flexuosa** (Fr.) Coppins & P. James Syns.: *Lecidea aeruginosa*, *L. flexuosa*  
**gelatinosa** (Flörke) Coppins & P. James Syns.: *Lecidea gelatinosa*, *Micarea gelatinosa*  
**glaucopholis** (Nyl. ex Hasse) Printzen & McCune Syn.: *Lecidea glaucopholis*, *L. admiscens*, *L. granulosa* var. *phyllizans* (Printzen & McCune 2004)  
**granulosa** (Hoffm.) Lumbsch Syns.: *Lecidea granulosa*, *L. quadricolor*  
**pseudogranulosa** Coppins & P. James  
**steppica** McCune & Camacho (McCune et al. 2002)  
**viridescens** (Schrader) Coppins & P. James Syns.: *Biatora viridescens*, *Lecidea viridescens*, *Micarea viridescens*  
*californica* McCune & Camacho (McCune et al. 2002) = *T. glaucopholis*  
*wallrothii* (Flörke) Hertel & Gotth. Schneider North American reports are *T. californica* (McCune et al. 2002)

#### **TREMATOSPHAERIOPSIS Elenkin**

\***parmeliana** (Jacz.) Elenkin (Hafellner 2001)

#### **TREMELLA Pers.**

\***caloplacae** (Zahlbr.) Diederich (Diederich 2007a)  
 \***candelariellae** Diederich & Etayo (Harris 2006a)  
 \***cetrariicola** Diederich & Coppins (Diederich 1996)  
 \***christiansenii** Diederich (Freebury 2014)  
 \***cladoniae** Diederich & M. S. Christ. (Diederich 1996)  
 \***dendrographae** Diederich & Tehler (Diederich 1996)  
 \***diploschistina** Millanes, M. Westb., Wedin & Diederich (Millanes et al. 2012)  
 \***dirinariae** Diederich, Millanes & Wedin (Ariyawansa et al. 2015)  
 \***everniae** Diederich (Diederich 1996)  
 \***graphidis** Diederich, Millanes, Wedin & Common (Ariyawansa et al. 2015)  
 \***haematommatis** Diederich (Diederich 1996)  
 \***harrisii** Diederich (Diederich 1996)  
 \***hypogymniae** Diederich & M. S. Christ. (Diederich 1996)  
 \***lethariae** Diederich (Diederich 2003)  
 \***lichenicola** Diederich (Diederich 1996)  
 \***nashii** Diederich (Diederich 2007a)  
 \***nephromatis** Diederich (Diederich 1996)  
 \***nieblae** Diederich & van den Boom (Diederich 2007a)  
 \***papuana** Diederich (Diederich 2003)  
 \***parmeliarum** Diederich (Diederich 1996)  
 \***pertusariae** Diederich (Diederich 1996)  
 \***phaeographinae** Diederich & Aptroot (Diederich 1996)  
 \***phaeophysciae** Diederich & M. S. Christ. (Diederich 2003)  
 \***pyrenulae** Diederich, Millanes, Wedin & Common (Ariyawansa et al. 2015)  
 \***ramalinae** Diederich (Diederich 2003)  
 \***tuckerae** Diederich (Diederich 2007a)  
 \***leptogii** Diederich (Diederich 2003) According to Diederich (2004b), in N.A. known only from

Mexico.

**TREMOLECIA** M. Choisy

**atrata** (Ach.) Hertel Syns.: *Lecidea atrata*, *L. dicksonii* auct.  
**jurana** (Schaerer) Hertel = *Farnoldia jurana*  
**micropsis** (A. Massal.) Hertel = *Farnoldia micropsis*  
**nivalis** (Anzi) Hertel = *Farnoldia micropsis*

**TRICHARIA** Fée

**cretacea** Vězda  
**cuneata** L. I. Ferraro & Vězda (Lücking et al. 2007)  
**duotela** W. B. Sanders & Lücking (Sanders & Lücking 2015)  
**floridensis** Lücking & W. R. Buck (Lücking et al. 2007)  
**santessonii** D. Hawksw.  
**subumbrosa** Lücking & W. R. Buck (Lücking et al. 2007)  
**tuckerae** Lücking & W. R. Buck (Lücking et al. 2007)  
**vainioi** R. Sant. (Lücking et al. 2007)  
**melanothrix** Fée = *T. santessonii* and *T. vezdae* for North American records  
**vezdae** W. R. Buck = *Gyalideopsis buckii*

**TRICHONECTRIA** Kirschst.

\***rubefaciens** (Ellis & Everh.) Diederich & Schroers (Sèrusiaux et al. 1999) = *Nectriopsis rubefaciens*

**TRICHORAMALINA** Rundel & Bowler

**crinita** (Tuck.) Rundel & Bowler Syn.: *Ramalina crinita*

**TRICHOSPHAERIA** Fuckel

\***lichenum** P. Karsten & Har. (Zhurbenko 2009b)

**TRICHOTHELIUM** Müll. Arg. (Harris 2005)

**americanum** Lendemer (Lendemer 2016b)  
**epiphyllum** Müll. Arg.  
**aeneum** (Wallr.) R. C. Harris = *Pseudosagedia aenea*  
**angustisporum** Cáceres & Lücking (Lücking & Cáceres 2001) North American reports are *T. americanum* (Lendemer 2016b)  
**cestrense** (E. Michener) R. C. Harris = *Pseudosagedia cestrensis*  
**chloroticum** (Ach.) R. C. Harris = *Pseudosagedia chlorotica*  
**crocynioides** R. C. Harris = *Pseudosagedia crocynioides*  
**guentheri** (Flotow) R. C. Harris = *Pseudosagedia guentheri*  
**horridulum** (Müll. Arg.) R. Sant. North American reports are *T. americanum* (Lendemer 2016b)  
**isidiatum** R. C. Harris = *Pseudosagedia isidiata*  
**lineare** (Leighton) R. C. Harris = *Porina linearis*  
**nitidulum** (Müll. Arg.) R. C. Harris = *Pseudosagedia nitidula*  
**rhapidospermum** (Müll. Arg.) R. C. Harris = *Pseudosagedia rhapidosperma*  
**thaxteri** (R. Sant.) R. C. Harris = *Pseudosagedia thaxteri*

**TRIMMATOSTROMA** Corda

\***dendrographae** Diederich, Ertz, U. Braun & Heuchert (Kocourková et al. 2012)

**TRIMMATOTHELE** Norman ex Zahlbr.

**umbellulariae** Herre = *Anisomeridium biforme* (Lendemer & Knudsen 2007)

**TRIMMATOTHELOPSIS** Zschacke (Knudsen & Lendemer 2016)

**americana** (K. Knudsen & Lendemer) K. Knudsen & Lendemer Syns.: *Melanophloea americana*, *Thelenella americana* (Knudsen & Lendemer 2016)  
**dispersa** (H. Magn.) K. Knudsen & Lendemer Syn.: *Acarospora dispersa* (Knudsen & Lendemer 2016)



**terricola** (H. Magn.) K. Knudsen & Lendemer Syn.: *Acarospora terricola* (Knudsen & Lendemer 2016)

**TRINATHOTREMA** Lücking, Rivas Plata & Mangold

**stictideum** (Nyl.) Lücking, R. Miranda & Kalb (Lücking et al. 2011)

**TRYPETHELIUM** Sprengel

**aeneum** (Eschw.) Zahlbr.

**eluteriae** Sprengel

**marcidum** (Fée) Aptroot (Lücking et al. 2011b)

**nitidiusculum** (Nyl.) R. C. Harris North American records of *T. catervarium* auct. belong here.

**ochroleucum** (Eschw.) Nyl.

**subeluteriae** Makhija & Patwardhan (Harris 1995a)

**tropicum** (Ach.) Müll. Arg. Syn.: *Pyrenula tropica*

**variolosum** Ach. (Harris 1995a)

**virens** Tuck. ex E. Michener

*annulare* (Fée) Mont. = *T. floridanum* for North American records

*carolinianum* Tuck. = *Bathelium carolinianum*

*catervarium* auct. = *T. nitidiusculum* for most North American records

*catervarium* (Fée) Tuck. = *Astrothelium variolosum*

*cruentum* Mont. = *Pyrenula cruenta*

*exocanthum* Tuck. = *T. virens*

*favulosum* Ach. (Fink 1935) Questionable for North America (Esslinger & Tucker 2009)

*floridanum* (Zahlbr. ex M. Choisy) R. C. Harris = *T. marcidum*

*mastoideum* (Ach.) Ach. = misidentification for North America (Harris 1995a)

*pallescens* Fée = *T. ochroleucum*

*porosum* (Eschw.) Ach. (Fink 1935) = *T. papillosum* Ach. Questionable for North America (Esslinger & Tucker 2009)

*scoria* Fée (Mohr 1901) = *T. mastoideum*, but a misidentification for North America

*scorites* Tuck. = *T. virens*

*variatum* Nyl. (Fink 1935) = *Laurera variata* (Nyl.) Zahlbr. Questionable for North America (Esslinger & Tucker 2009)

**TUCKERMANELLA** Essl.

**arizonica** Essl. (Esslinger 2003)

**coralligera** (W. A. Weber) Essl. Syn.: *Cetraria coralligera*, *Tuckermannopsis coralligera* (Esslinger 2003)

**fendleri** (Nyl.) Essl. Syn.: *Cetraria fendleri*, *Tuckermannopsis fendleri* (Esslinger 2003)

**weberi** (Essl.) Essl. Syn.: *Cetraria weberi* (Esslinger 2003)

**pseudoweberi** Essl. [Erroneously listed here; reported only from Mexico](#) (Esslinger 2003)

**TUCKERMANNOPSIS** Gyelnik

**americana** (Sprengel) Hale Syn.: *Cetraria halei*, *C. ciliaris* var. *halei*

**chlorophylla** (Willd.) Hale Syn.: *Cetraria chlorophylla*, *C. scutata* auct. non (Wulfen) Poetsch

**ciliaris** (Ach.) Gyelnik Syn.: *Cetraria ciliaris*

**orbata** (Nyl.) M. J. Lai Syn.: *Cetraria orbata*

**platyphylla** (Tuck.) Hale Syn.: *Cetraria platyphylla* Placement uncertain (Thell et al. 2009)

**sepincola** (Ehrh.) Hale Syn.: *Cetraria sepincola*, *C. scutata* (Wulfen) Poetsch non auct. Placement uncertain (Thell et al. 2009)

**subalpina** (Imshaug) Kärnefelt Syn.: *Cetraria subalpina*, *C. arborialis* Placement uncertain (Thell et al. 2009)

*aurescens* (Tuck.) Hale = *Ahtiana aurescens*

"*californica*" = *Kaernefeltia californica*

*canadensis* (Räsänen) Hale = *Vulpicida canadensis*

*coralligera* (W. A. Weber) W. A. Weber = *Tuckermanella coralligera*

*fendleri* (Nyl.) Hale = *Tuckermanella fendleri*

*halei* (W. L. Culb. & C. F. Culb.) M. J. Lai = *T. americana*



inermis (Nyl.) Kärnefelt = *Masonhalea inermis*  
 juniperina (L.) Hale = Old North American records are *Vulpicida canadensis* or *V. viridis*  
 juniperina (L.) Hale = *Vulpicida juniperina*  
 merrillii (Du Rietz) Hale = *Kaernefeltia merrillii*  
 oakesiana (Tuck.) Hale = *Usnocetraria oakesiana*  
 pallidula (Tuck. ex Riddle) Hale = *Ahtiana pallidula*  
 pinastri (Scop.) Hale = *Vulpicida pinastri*  
 viridis (Schwein.) Hale = *Vulpicida viridis*  
 [Cetraria weberi Essl.] = *Tuckermanella weberi*

#### TURGIDOSCULUM Kohlm. & E. Kohlm.

complicatulum (Nyl.) Kohlm. & E. Kohlm. = [Mastodia tessellata](#)

#### TYLOPHORON Nyl. ex Stizenb.

**hibernicum** (D. Hawksw., Coppins & P. James) Ertz, Diederich, Bungartz & Tibell (Lendemer et al. 2013)

**moderatum** Nyl.

**americanum** [Lendemer, E. Tripp & R. C. Harris \(Lendemer et al. 2013\)](#) = *Sporodophoron americanum* ([Frisch et al. 2015](#))

**protrudens** Nyl. North American reports were misidentifications of *T. hibernicum* (Lendemer et al. 2013)

#### TYLOTHALLIA P. James & H. Kilius

**biformigera** (Leighton) P. James & H. Kilius Syns.: *Catillaria biformigera*, *C. bahusiensis*

#### UMBILICARIA Hoffm.

**americana** Poelt & T. H. Nash

**angulata** Tuck. Syn.: *Gyrophora angulata*

**aprina** Nyl.

**arctica** (Ach.) Nyl. Syn.: *Gyrophora arctica*

**cinereorufescens** (Schaerer) Frey

**crustulosa** (Ach.) Frey Syn.: *Omphalodiscus crustulosus*

**cylindrica** (L.) Delise ex Duby Syn.: *Gyrophora cylindrica*

**decussata** (Vill.) Zahlbr. Syns.: *Omphalodiscus decussatus*, *Gyrophora decussata*

**deusta** (L.) Baumg. Syn.: *Gyrophora deusta*, *G. flocculosa*

**havaasii** Llano

**hirsuta** (Sw. ex Westr.) Ach.

**hyperborea** (Ach.) Hoffm. var. **hyperborea** Syn.: *Gyrophora hyperborea*

**hyperborea** var. **radicicula** (J. E. Zetterst.) Hasselrot

**lambii** Imshaug

**leiocarpa** DC. Syn.: *Agyrophora leiocarpa*

**lyngei** Schol. Syn.: *Agyrophora lyngei*

**mammulata** (Ach.) Tuck. Syn.: *Gyrophora dillenii*

**muhlenbergii** (Ach.) Tuck. Syns.: *Actinogyra muhlenbergii*, *Gyrophora muhlenbergii*

**nodulospora** McCune, Di Meglio & M. J. Curtis (McCune et al. 2014a)

**nylanderiana** (Zahlbr.) H. Magn.

**phaea** Tuck. Syn.: *Gyrophora phaea*

**polaris** (Schol.) Zahlbr. Syn.: *Omphalodiscus krascheninnikovii* auct.

**polyphylla** (L.) Baumg. Syn.: *Gyrophora polyphylla*

**polyrhiza** (L.) Fr. Syns.: *Actinogyra polyrhiza*, *Gyrophora polyrhiza*

**proboscidea** (L.) Schrader Syn.: *Gyrophora proboscidea*

**rigida** (Du Rietz) Frey Syns.: *U. coriacea*, *Agyrophora rigida*, *Gyrophora anthracina*

**scholanderi** (Llano) Krog Syn.: *Agyrophora scholanderi*

**semitensis** Tuck. (Fink 1935; McCune & Curtis 2012) Syn.: *U. angulata* (Llano 1950)

**subglabra** (Nyl.) Harm. (Nash et al. 1998)

**torrefacta** (Lightf.) Schrader Syn.: *Gyrophora erosa*, *G. torrefacta*

**vellea** (L.) Ach. Syn.: Gyrophora vellea  
**virginis** Schaerer Syn.: Omphalodiscus virginis, Gyrophora rugifera  
 caroliniana Tuck. = Lasallia caroliniana  
 coriacea Imshaug = U. rigida  
 dillenii Tuck. = U. mammulata  
 grisea Hoffm. = misidentification for North America (Esslinger & Tucker 2009)  
 intermedia Frey = U. hyperborea  
 krascheninnikovii (Savicz) Zahlbr. North American reports are U. polaris (Davydov et al. 2011)  
 papulosa (Ach.) Nyl. = Lasallia papulosa  
 pensylvanica Hoffm. = Lasallia pensylvanica  
 pustulata (L.) Hoffm. = Lasallia pustulata  
 pustulata var. papulosa (Ach.) Tuck. = Lasallia papulosa

#### UNGUICULARIOPSIS Rehm

\***fasciculata** Etayo (Etayo & Triebel 2010)  
 \***lettaui** (Grumann) Coppins (Diederich 2003)  
 \***refractiva** (Coppins) Coppins (Zhurbenko 2009a)  
 \***thallophila** (P. Karsten) W. Y. Zhuang (Diederich 2003)  
 \*nephromatis Zhurb. & Zavarzin (Zhurbenko 2007b) = Protoungicularia nephromatis

#### URCEOLARIA Hooker = ASPICILIA

actinostoma Ach. = Diploschistes actinostomus  
 albissima (Ach.) Fink = Diploschistes diacapsis  
 scruposa (Schreber) Ach. = Diploschistes scruposus

#### USNEA Dill. ex Adanson

**aculeata** Motyka (apparent nomen nudum, identity uncertain)  
**affinis** Motyka (apparent nomen nudum, identity uncertain)  
**alpina** Motyka  
**amabilis** Motyka  
**amblyoclada** (Müll. Arg.) Zahlbr. (Clerc & Herrera-Campos 1997)  
**angulata** Ach.  
**australis** Fr.  
**baileyi** (Stirton) Zahlbr.  
**brasiliensis** (Zahlbr.) Motyka (Pérez-Vargas et al. 2010)  
**brattiae** P. Clerc (Clerc 2007)  
**californica** Herre  
**capillaris** Motyka  
**catenulata** Motyka (Identification uncertain)  
**cavernosa** Tuck.  
**ceratina** Ach.  
**chaetophora** Stirton (Halonen et al. 1998)  
**cirrosa** Motyka  
**condensata** Motyka  
**cornuta** Körber subsp. **cornuta**  
**cristatula** Motyka (Knudsen & Lendemer 2006)  
**cylindrica** P. Clerc (Dillman et al. 2012)  
**dasaea** Stirton (Clerc & Herrera-Campos 1997)  
**dasopoga** (Ach.) Nyl. (Arcadia 2013)  
**deformis** Motyka  
**diffracta** Vainio (Lendemer et al. 2008c)  
**dimorpha** (Müll. Arg.) Motyka  
**diplotypus** Vainio (Halonen et al. 1998)  
**endochrysea** Stirton  
**entoviolata** Motyka (Clerc 2004, Lendemer & Tripp 2008)  
**erinacea** Vainio (Tavares & Sanders 1998; Clerc 2011)

**esperantiana** Clerc (Halonen et al. 1998)  
**evansii** Motyka  
**fibrillosa** Motyka  
**flammea** Stirton (Clerc & May 2007)  
**flavocardia** Räsänen (Clerc 2004)  
**florida** (L.) Weber ex F. H. Wigg. (questionable for North America, Tavares & Sanders 1998)  
**fragilescens** Hav. ex Lynge  
**fragilescens** var. **mollis** (Vainio) Clerc  
**freyi** Motyka  
**fulvoreanens** (Räsänen) Räsänen  
**furfurosula** (Zahlbr.) Motyka  
**glabrata** (Ach.) Vainio  
**glabrescens** (Nyl. ex Vainio) Vainio  
**graciosa** Motyka (Identification uncertain)  
**halei** P. Clerc (Clerc & Herrera-Campos 1997)  
**hirta** (L.) Weber ex F. H. Wigg.  
**intermedia** (A. Massal.) Jatta (Clerc 2007)  
**lambii** (Imshaug) Wirtz & Lumbsch Syn.: *Neuropogon lambii* (Wirtz et al. 2008; Lumbsch & Wirtz 2011)  
**lapponica** Vainio  
**leucosticta** Vainio  
**longissima** Ach.  
**macaronesica** P. Clerc (Clerc 2011)  
**merrillii** Motyka  
**mexicana** Vainio (Truong et al. 2013)  
**michauxii** I. Tav.  
**mirabilis** Motyka  
**monstruosa** Vainio  
**mutabilis** Stirton  
**myrmaiacaina** P. Clerc (Clerc 2007)  
**nidulans** Motyka (Halonen et al. 1998)  
**occidentalis** Motyka  
**pacificana** P. Halonen (Halonen 2000)  
**parafloridana** [K. Mark, Will-Wolf & Randlane \(Mark et al. 2016\)](#)  
**parvula** Motyka (Clerc 2007)  
**praetervisa** (Asahina) P. Clerc (Clerc 2004)  
**quasirigida** Lendemer & Tavares (Lendemer & Tavares 2003)  
**ramillosa** Motyka  
**roseola** Vainio  
**rubicunda** Stirton  
**scabrata** Nyl.  
**scholanderi** Llano  
**silesiaca** Motyka (Tavares 1997; Gams 2004)  
**silvatica** Motyka  
**sphacelata** R. Br. Syns.: *Neuropogon sphacelatus*, *N. sulphureus*  
**strigosa** (Ach.) Eaton subsp. **major** (Michaux) I. Tav.  
**strigosa** subsp. **rubiginea** (Michaux) I. Tav. Syn.: *U. rubiginea*  
**strigosa** subsp. **strigosa**  
**subcornuta** Stirton (Brodo et al. 2001)  
**subfloridana** Stirton  
**subfusca** Stirton  
**subgracilis** Vainio (Tavares 1997; Clerc 2004; Truong et al. 2013)  
**subrubicunda** P. Clerc (Clerc 2011)  
**subscabrosa** Nyl. ex Motyka  
**transitoria** Motyka (Truong et al. 2013)  
**trichodea** Ach.



**tristis** Motyka  
**vainioi** Motyka  
**variegata** Stirton  
**wasmuthii** Räsänen  
**xanthopoga** Nyl.  
 ammannii P. Clerc & Herrera-Campos In North America, only known in Mexico (Clerc & Herrera-Campos 1997)  
 antillarum (Vainio) Zahlbr. = *U. baileyi*  
 arizonica Motyka = *U. intermedia* (Clerc 2007)  
 articulata (L.) Hoffm. = misidentification for North America  
 barbata (L.) F. H. Wigg. = misidentification for North America?  
 barbata var. xanthopoga Müll. Arg. = *U. xanthopoga*  
 betulina Motyka = (?) *U. glabrescens*  
 cornuta subsp. brasiliensis (Zahlbr.) P. Clerc (Clerc 2007) = *U. brasiliensis*  
 caucasica Vainio = (?) *U. dasopoga*  
 ciliifera Motyka (apparent nomen nudum) = *U. cirrosa* (fide J. Lendemer)  
 comosa auct. = *U. subfloridana*  
 compacta (Räsänen) Motyka = *U. glabrescens*  
 confusa Asahina = *U. cornuta*  
 diplotypus Vainio = saxicolous specimens were misidentification for North America (Clerc & Herrera-Campos 1997)  
 distincta Motyka = *U. glabrescens*  
 duriuscula Motyka = *U. mexicana* (Truong et al. 2013) However, the two names represent different chemotypes  
 esthonica Räsänen = *U. dasopoga*  
 filipendula Stirton = *U. dasopoga* (Arcadia 2013)  
 finkii Zahlbr. = *U. transitoria* (Truong et al. 2013)  
 flagellata Motyka = *U. dasopoga*  
 globularis Motyka = *U. amblyoclada*  
 herrei Hale = nom. nud.  
 hesperina Motyka = *U. subgracilis*  
 implicita (Stirton) Zahlbr. = *U. baileyi*  
 inflata Delise ex Duby nom. nudum = *U. cornuta*  
 kujalae Räsänen = *U. glabrata*  
 laricina Vainio ex Räsänen = (?) *U. lapponica*  
 madeirensis Motyka = *U. silesiaca*  
 mollis Stirton = *U. fragilescens* var. *mollis*  
 montana Motyka = misidentification for North America  
 nashii P. Clerc & Herrera-Campos In North America, only known in Mexico (Clerc & Herrera-Campos 1997)  
 pachyclada Motyka = *U. ceratina* (Clerc 2007)  
 pennsylvanica Motyka = *U. rubicunda* (Clerc 2007)  
 perplectata Motyka = *U. baileyi* (Clerc 2007)  
 perplexans Stirton (Clerc 1987) = an Asian taxon, not present in North America  
 plicata (L.) Weber ex F. H. Wigg. = misidentification for North America  
 prostrata Vainio ex Räsänen = *U. barbata*, misidentification for North America?  
 retifera Motyka = *U. intermedia* (Clerc 2007)  
 rigida (Ach.) Motyka (Halonen et al. 1998) = *U. quasirigida*  
 rubiginea (Michaux) A. Massal. = *U. strigosa* subsp. *rubiginea*  
 rugulosa Vainio = *U. scabrata*  
 scabiosa Motyka = *U. scabrata* (Clerc 2007)  
 scabrata subsp. nylanderiana Motyka = chemotype of *U. scabrata*  
 schadenbergiana Göpp. & Stein (Clerc 2007) N.A. reports are *U. subgracilis* (Truong et al. 2013)  
 shimadai Asahina In North America, only known in Mexico (Clerc 2004)  
 similis Motyka ex Räsänen = *U. subfloridana*  
 sorediifera (Arnold) Lynge = *U. glabrata*

sorediifera sensu Motyka = U. substerilis (Clerc 2007)  
spinulifera (Vainio) Motyka = U. dasaea (Clerc 2007)  
stuppea (Räsänen) Motyka = U. substerilis (Clerc 2007)  
subcavata Motyka = U. perplectata  
subhirta (Vainio) Motyka = U. cornuta subsp. cornuta (Clerc 2007)  
sublaxa Vainio = U. dasopoga  
[substerilis Motyka = U. lapponica \(Mark et al. 2016\)](#)  
variolosa Motyka = U. hirta (Clerc 1997)  
wirthii Clerc = U. flavocardia

#### **USNOCETRARIA** M. J. Lai & C. J. Wei

**oakesiana** (Tuck.) M. J. Lai & C. J. Wei Syns.: *Allocetraria oakesiana*, *Cetraria oakesiana*,  
*Tuckermannopsis oakesiana* (Thell et al. 2009)

#### **VAHLIELLA** P. M. Jørg. (Jørgensen 2008)

**californica** (Tuck.) P. M. Jørg. (Jørgensen 2008) Syns. *Fuscopannaria californica*, *Pannaria microphylla*  
var. *californica*  
**globigera** (Fryday & P. M. Jørg.) P. M. Jørg. (Jørgensen 2008) Syn.: *Fuscopannaria globigera*  
**hookerioides** (P. M. Jørg.) P. M. Jørg. (Jørgensen 2008) Syn.: *Fuscopannaria hookerioides*  
**labrata** (P. M. Jørg.) P. M. Jørg. (Jørgensen 2008) Syn.: *Fuscopannaria labrata*  
**leucophaea** (Vahl) P. M. Jørg. (Jørgensen 2008) Syns.: *Fuscopannaria leucophaea*, *Pannaria*  
*leucophaea*, *Parmeliella microphylla*  
**saubinetii** (Mont.) P. M. Jørg. (Jørgensen 2008) Syns.: *Fuscopannaria saubinetii*, *Parmeliella saubinetii*

#### **VAINIONORA** Kalb

**americana** Kalb, Tønsberg & Elix (Kalb 2004b)

#### **VARICELLARIA** Nyl.

**rhodocarpa** (Körber) Th. Fr.  
**velata** (Turner) Schmitt & Lumbsch (Schmitt et al. 2012) Syn.: *Pertusaria velata*  
*kemensis* Räsänen = *V. rhodocarpa*

#### **VARIOLARIA** Ach. (Lendemer et al. 2013)

**amara** Ach. Syn.: *Pertusaria amara*  
**multipunctoides** (Dibben) Lendemer, Hodkinson & R. C. Harris Syn.: *Pertusaria multipunctoides*  
**ophthalmiza** (Nyl.) Darb. Syn.: *Pertusaria ophthalmiza*, *P. lecanina* subsp. *nigra*  
**pustulata** (Brodo & W. L. Culb.) Lendemer, Hodkinson & R. C. Harris Syns.: *Haematomma*  
*pustulatum*, *Loxospora pustulata*  
**trachythallina** (Erichsen) Lendemer, Hodkinson & R. C. Harris Syn.: *Pertusaria trachythallina*, *P.*  
*laevigata*  
**waghornei** (Hulting) Darb. Syn.: *Pertusaria waghornei*

#### **VARIOSPORA** Arup, Søchting & Frödén (Arup et al. 2013)

**aurantia** (Pers.) Arup, Søchting & Frödén Syns.: *Caloplaca aurantia*, *C. callopisma*  
**velana** (A. Massal.) Arup, Søchting & Frödén Syn.: *Caloplaca velana*

#### **VERMILACINIA** Spjut & Hale (Spjut 1996) = **NIEBLA** (Bowler & Marsh 2004)

*acicularis* Spjut (Spjut 1996) = *Niebla ceruchoides*  
*cephalota* (Tuck.) Spjut & Hale (Spjut 1996) = *Niebla cephalota*  
*cerebra* Spjut (Spjut 1996) = *Niebla ceruchis*  
*ceruchoides* (Rundel & Bowler) Spjut (Spjut 1996) = *Niebla ceruchoides*  
*combeoides* (Nyl.) Spjut & Hale (Spjut 1996) = *Niebla combeoides*  
*corrugata* Spjut (Spjut 1996) = *Niebla ceruchis*  
*howei* Spjut (Spjut 1996) = *Niebla ceruchis*  
*laevigata* (Rundel & Bowler) Spjut (Spjut 1996) = *Niebla laevigata*  
*leopardina* Spjut (Spjut 1996) = *Niebla ceruchis*

nylanderi Spjut (Spjut 1996) = Niebla ceruchis  
 paleoderma Spjut (Spjut 1996) = Niebla laevigata  
 polymorpha (Bowler, Marsh, T. H. Nash & Riefner) Spjut (Spjut 1996) = Niebla polymorpha  
 procera (Bowler & Rundel) Spjut (Spjut 1996) = Niebla procera  
 pumila Spjut (Spjut 1996) = Niebla ceruchoides  
 reptiloderma Spjut (Spjut 1996) = Niebla cedrosensis  
 robusta (Howe) Spjut & Hale (Spjut 1996) = Niebla robusta  
 tigrina (Follmann) Spjut & Hale (Spjut 1996) = misidentification for North America  
 tuberculata (Riefner, Bowler, J. E. Marsh & T. H. Nash) Spjut (Spjut 1996) = Niebla tuberculata  
 zebrina Spjut (Spjut 1996) = Niebla ceruchis

## **VERRUCARIA** Schrader

**acrotella** Ach.  
**adelminienii** Zschacke (Breuss 2007b)  
**aethiobola** Wahlenb.  
**alutacea** Wallr. (Breuss 2007b)  
**americana** (B. de Lesd.) Breuss Syn.: Endopyrenium americanum (Breuss 2007b)  
**amphibia** Clemente  
**amylacea** Hepp  
**applanata** Hepp  
**arctica** Lynge  
**aspecta** Breuss (Breuss 2007b)  
**asperula** Servít (Breuss 2007b)  
**beltraminiana** (A. Massal.) Trevisan (Breuss 2007b)  
**bernaicensis** Malbr. (Breuss 2007b)  
 #**bernardinensis** Breuss (Breuss 2007b)  
**boccana** Servít (Knudsen & Kocourková 2012b)  
**breussii** Diederich & van den Boom (McCune et al. 2014b)  
**bryoctona** (Th. Fr.) A. Orange (Breuss 2002b)  
**caerulea** DC.  
**calkinsiana** Servít  
**carbonusta** Breuss (Hutten et al. 2013)  
**cataleptoides** (Nyl.) Nyl.  
 #**cetera** Breuss (Breuss 1998)  
**ceuthocarpa** Wahlenb.  
**confluens** A. Massal. (Breuss 2007b, McCune et al. 2014b)  
**dacryodes** Nyl.  
**degelii** R. Sant.  
**divergens** Nyl.  
**devergescens** Nyl.  
**deversa** Vainio  
**ditmarsica** Erichsen  
**dolomitica** (A. Massal.) Kremp. (McCune et al. 2014b)  
**dolosa** Hepp  
**elaeina** Borrer (Breuss 2007b, Knudsen 2007c)  
**elaeomelaena** (A. Massal.) Arnold  
**endocarpoides** Servít (Breuss 2007b)  
**epimaura** Brodo (Brodo & Santesson 1997)  
**erichsenii** Zschacke  
**falcata** Breuss (Breuss 2007b)  
**fayettensis** Servít  
**finkiana** Servít  
**fischeri** Müll. Arg. (McCune et al. 2014b)  
**floerkeana** Dalla Torre & Sarnth (Breuss 2007b)  
**fraudulosa** Nyl. (Breuss 2007b)  
**funckii** (Sprengel) Zahlbr.



**furfuracea** (B. de Lesd.) Breuss (Breuss 2007b, Knudsen 2007c)  
**fusca** Pers. (Tucker et al. 2006)  
**fuscoatroides** Servít (Knudsen & La Doux 2006)  
**fusconigrescens** Nyl.  
**glaucovirens** Grumann  
**halizoa** Leighton  
**hochstetteri** Fr. (McCune et al. 2014b)  
**hydrela** Ach.  
**illinoisensis** Servít  
**incrassata** Breuss (Breuss 2007b)  
**inficiens** Breuss Syns.: Catapyrenium plumbeum, Dermatocarpon plumbeum, Endopyrenium plumbeum (Breuss 1998)  
**inornata** Servít (Breuss 2007b)  
**integra** (Nyl.) Nyl.  
**internigrescens** (Nyl.) Erichsen  
**iovensis** Servít  
**kondaensis** Vainio (McCune et al. 2014b)  
**kootenaica** Breuss & T. Sprib. (Breuss & Spribille 2001)  
**latebrosa** Körber (Spribille et al. 2010)  
**lobata** J. W. Thomson  
**macrostoma** Dufour ex DC.  
**maculicarpa** Breuss (Breuss 2007b)  
**margacea** (Wahlenb.) Wahlenb.  
**memnonia** (Flotow) Arnold (Tucker et al. 2006, Breuss 2007b)  
**mimicrans** Servít (Breuss 2007b, Knudsen 2007c)  
**muralis** Ach.  
**murorum** (Arnold) Lindau (Breuss 2007b)  
**nigrescens** Pers.  
**nigrescentoidea** Fink  
**nigrofusca** Servít (Breuss 2007b)  
**novomexicana** B. de Lesd.  
**obductilis** (Nyl.) Zschacke (Nash et al. 1998)  
**obnigrescens** Nyl.  
**obsoleta** Lynge  
**onegensis** Vainio (Breuss 2007b)  
**ossiseda** Lynge  
**othmarii** K. Knudsen & L. Arcadia (Knudsen & Kocourková 2012a)  
**phaeothelena** Th. Fr.  
**phloeophila** Breuss (Breuss 2002b)  
**pinguicula** A. Massal.  
**poeltii** (Servít) Breuss (McCune et al. 2014b)  
**praetermissa** (Trevisan) Anzi  
**prominula** Nyl.  
**prosoplectenchymatica** Servít (Breuss 2007b)  
**pseudonigrescens** Servít  
**putnae** Servít (McCune et al. 2014b)  
**quercina** Breuss (Breuss 2007b)  
**riddleana** R. C. Harris (Harris 1995a)  
**runderella** Nyl.  
**rufofuscella** Servít (Breuss 2007b, Knudsen 2007c)  
**rupestris** Schrader  
**sandstedei** B. de Lesd.  
**schindleri** Servít (Breuss 2007b)  
**schofieldii** Brodo (Brodo & Santesson 1997)  
**silicicola** Fink  
**sorbicola** Servít

**sordida** [Fink](#)  
**sphaerospora** Anzi (Goward et al. 1996)  
**sphinctrina** Ach.  
**subdivisa** Breuss (Breuss 2007b)  
**subglaucina** B. de Lesd.  
**submersella** Servít  
**submuralis** Nyl.  
**subvirens** Servít (McCune et al. 2014b)  
**tectorum** (A. Massal.) Körber  
**thujae** Lendemer & Breuss (Lendemer & Breuss 2009)  
**trabicola** Arnold ex Servít (Nash et al. 1998, Breuss 2007b)  
**turgida** Servít (Breuss 2007b, Knudsen 2007c)  
**umbrinula** Nyl.  
**viridigrana** Breuss (Breuss 2002b)  
**viridula** (Schrader) Ach.  
**xyloxa** Norman (Breuss 2002b)  
**aquilella** Nyl. = [V. aethiobola](#)  
 bacillosa Nyl. = *Sarcopyrenia bacillosa*  
 baldensis A. Massal. (Halda 2003) = *Bagliettoa baldensis* (Breuss 2007b)  
 calciseda DC. = *Bagliettoa calciseda*  
 canella Nyl. = *Placopyrenium canellum*  
 cestrensis Tuck. ex E. Michener = *Pseudosagedia cestrensis*  
 circumspersella Nyl. = *Thelidium circumspersellum*, [but apparent misidentification for North America \(Nash 2002\)](#)  
 #compacta (A. Massal.) Jatta (Knudsen & La Doux 2005) = *Heteroplacidium compactum*  
 diffractella Nyl. = *Endocarpon diffractellum*  
 disjuncta Arnold = *Parabagliettoa disjuncta*  
 exalbida Nyl. = *Polyblastia exalbida*  
 fulva Cumm. Identity uncertain, illegitimate homonym of *V. fulva* Hoffm. (Dillman et al. 2012)  
 fuscella (Turner) Winch = *Placopyrenium fuscillum*  
 fuscella var. glaucina (Ach.) Schaerer = *V. caerulea*  
 glaucina Ach. = *V. caerulea*  
 hymnothora Ach. = *Granulopyrenis hymnothora*  
 iowensis Servít = *V. fayettensis*  
 intercedens Nyl. = *Polyblastia cupularis*  
 kernstockii Zschacke = *Hydropunctaria rheitrophila*  
 laevata Ach. = *V. aethiobola*  
 lecideoides (A. Massal.) Trevisan = *Placopyrenium lecideoides*  
 marmorea (Scop.) Arnold = *Bagliettoa marmorea* (Yuzon et al. 2014)  
 maura Wahlenb. = *Hydropunctaria maura*  
 melas Herre = *Wahlenbergiella striatula* (Knudsen 2012)  
 microbola Tuck. = *Thelidium fontigenum*  
 microspora auct. = *V. halizoa*  
 microspora Nyl. = *V. striatula*  
 minor Breuss (Breuss 2007b) = *Verruculopsis minutum* (Krzewicka 2012)  
 mucosa Wahlenb. = *Wahlenbergiella mucosa*  
 mutabilis Borrer ex Leighton = nom. illegit.  
 obtenta Nyl. = *Sporodictyon terrestre* (Dillman et al. 2012)  
 papillosa Ach. (Breuss 2007b, Knudsen et al. 2008b) = *V. viridula* (Orange 2004)  
 papillosa Flörke non Ach. = *V. floerkeana* (Breuss 2007b)  
 pernigrata Nyl. = *Protothelenella sphinctrinoides* (Dillman et al. 2012)  
 perpusilla Russell (Fink 1935) = *Thelidium perpusillum* (A. W. Russell) Zahlbr. Uncertain for North America  
 rheitrophila Zschacke = *Hydropunctaria rheitrophila*  
 rubrocincta Breuss (Breuss 2000) = *Bagliettoa rubrocincta* (Yuzon et al. 2014)  
 rupicola (B. de Lesd.) Breuss non (L.) Humb. = *V. othmarii* (Knudsen & Kocourková 2012a)

sprucei (Lönnr.) Bab (Fink 1935) = Thelidium papulare (Nimis & Martellos 2003)  
stanfordii Herre = Placopyrenium stanfordii  
striatula Wahlenb. = Wahlenbergiella striatula  
submersa Schaerer = V. submersella  
subsuperficialis Fink = V. striatula  
[tavaresiae R. Moe \(Moe 1997\) = Wahlenbergiella tavaresiae](#)  
terebrata (Mudd) Leighton (Fink 1935) = Staurothele rupifraga (Smith 1926)  
virens Nyl. = V. glaucovirens  
zamenhofiana Clauzade & Cl. Roux = Heteroplacidium zamenhofianum (Kocourková et al. 2012)

**VERRUCULOPSIS** Gueidan, Nav.-Ros. & Cl. Roux

**minutum** (Hepp) Krzewicka Syn.: Verrucaria minor (Krzewicka 2012)

**VESTERGRENOPSIS** Gyelnik

**elaeina** (Wahlenb.) Gyelnik  
**isidiata** (Degel.) E. Dahl Syn.: Pannaria isidiata  
**sonomensis** (Tuck.) T. Sprib. & Muggia (Spribille & Muggia 2012) Syn.: Koerberia sonomensis,  
Pannaria sonomensis

**VEZDAEA** Tsch.-Woess & Poelt

**acicularis** Coppins (Brodo 2001; Lendemer & Yahr 2004)  
**leprosa** (P. James) Vězda (Buck et al. 1999)  
**retigera** Poelt & Döbbeler (Lendemer & Yahr 2004)  
**rheocarpa** Poelt & Döbbeler (Westberg 2004b)  
**schuyleriana** Lendemer (Lendemer 2011c)  
**stipitata** Poelt & Döbbeler

**VIGNERONIA** Ertz (Ertz et al. 2015b)

**cypressi** (R. C. Harris) Ertz & Tehler

**VIOLELLA** T. Sprib. (Spribille et al. 2011a)

**fucata** (Stirton) T. Sprib. Syn.: Mycoblastus fucatus

**VOUAUXIELLA** Petrak & Sydow

\***lichenicola** (Lindsay) Petrak & Sydow (Esslinger & Egan 1995)  
\***verrucosa** (Vouaux) Petrak & Sydow (Diederich 2003)

**VOUAUXIOMYCES** Dyko & D. Hawksw.

\***truncatus** (B. de Lesd.) Dyko & D. Hawksw. (= anamorph of Abrothallus microspermus)

**VULPICIDA** J.-E. Mattsson & M. J. Lai

**canadensis** (Räsänen) J.-E. Mattsson & M. J. Lai Syns.: Cetraria canadensis, Tuckermannopsis canadensis  
**juniperina** (L.) J.-E. Mattsson & M. J. Lai (Saag et al. 2014)  
**pinastri** (Scop.) J.-E. Mattsson & M. J. Lai Syns.: Cetraria pinastri, Tuckermannopsis pinastri  
**viridis** (Schwein.) J.-E. Mattsson & M. J. Lai Syn.: Cetraria viridis, Tuckermannopsis viridis  
tilesii (Ach.) J.-E. Mattsson & M. J. Lai = Vulpicida juniperina (Saag et al. 2014)

**WAHLENBERGIELLA** Gueidan & Thüs (Gueidan et al. 2009)

**mucosa** (Wahlenb.) Gueidan & Thüs Syn.: Verrucaria mucosa  
**striatula** (Wahlenb.) Gueidan & Thüs Syns.: Verrucaria melas, V. striatula  
[tavaresiae](#) (R. L. Moe) Gueidan, Thüs, & Pérez-Ortega Syn.: Verrucaria tavaresiae (Gueidan et al. 2011)

**WAYNEA** Moberg

**californica** Moberg Erroneously listed here as a synonym of W. stoechadiana



stoechadiana (Abbassi Maaf & Cl. Roux) Cl. Roux & Clerc = Not in North America

**WEDDELLOMYCES** D. Hawksw.

\***xanthoparmeliae** Calat. & Nav.-Ros. (Kocourková & Knudsen 2008)

**WENTIOMYCES** Koord.

\***peltigericola** D. Hawksw. (Alstrup & Cole 1998) = *Raciborskiomyces peltigericola*

**WETMOREANA** Arup, Söchting & Frödén (Arup et al. 2013)

**texana** (Wetmore & Kärnefelt) Arup, Frödén & Söchting Syn.: *Caloplaca texana*

**XANTHOCARPIA** A. Massal. & De Not. (Arup et al. 2013)

**crenulatella** (Nyl.) Frödén, Arup & Söchting Syn.: *Caloplaca crenulatella*

**erichansenii** (S. Y. Kondr., A. Thell, Kärnefelt & Elix) Frödén, Arup & Söchting. Syn.: *Caloplaca erichansenii*

**feracissima** (H. Magn.) Frödén, Arup & Söchting Syn.: *Caloplaca feracissima*

**lactea** (A. Massal.) A. Massal. Syn.: *Caloplaca lactea*

**marmorata** (Bagl.) Frödén, Arup & Söchting Syn.: *Caloplaca marmorata*

**tominii** (Savicz) Frödén, Arup & Söchting Syn.: *Caloplaca tominii*

**XANTHOMENDOZA** S. Y. Kondr. & Kärnefelt

**borealis** (R. Sant. & Poelt) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria borealis* (Söchting et al. 2002)

**concinna** (J. W. Thomson & T. H. Nash) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria concinna* (Söchting et al. 2002)

**fallax** (Hepp ex Arnold) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria fallax* (Söchting et al. 2002)

**fulva** (Hoffm.) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria fulva* (Söchting et al. 2002)

**galericulata** L. Lindblom (Lindblom 2006)

**hasseana** (Räsänen) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria hasseana* (Söchting et al. 2002)

**mendozae** (Räsänen) S. Y. Kondr. & Kärnefelt Syn.: *Xanthoria mendozae* (Lindblom 2004a)

**montana** (L. Lindblom) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria montana* (Söchting et al. 2002)

**oregana** (Gyelnik) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria oregana* (Söchting et al. 2002)

**subramulosa** (Räsänen) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria subramulosa* (Söchting et al. 2002) According to Lindblom (1997), this is a synonym of *X. fulva*

**trachyphylla** (Tuck.) Frödén, Arup & Söchting Syn.: *Caloplaca trachyphylla*, *Placodium elegans* var. *trachyphyllum*

**ulophyllodes** (Räsänen) Söchting, Kärnefelt & S. Y. Kondr. Syn.: *Xanthoria ulophyllodes* (Söchting et al. 2002)

**weberi** (S. Y. Kondr. & Kärnefelt) L. Lindblom (Lindblom 2006) Syn.: *Oxneria weberi*, *Xanthoria wetmorei*

**alfredii** (S. Y. Kondr. & Poelt) Söchting, Kärnefelt & S. Y. Kondr. = North American report is *X. montana*

**rosemarieae** S. Y. Kondr. & Kärnefelt (Lumbsch et al. 2011) = *X. weberi* (Knudsen et al. 2011b)

**XANTHOPARMELIA** (Vainio) Hale

**ahtii** (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.: *Neofuscelia ahtii*, *Parmelia ahtii*

**ajoensis** (T. H. Nash) Egan Syn.: *Parmelia ajoensis*

**amableana** (Gyelnik) Hale (Nash & Elix 2004)

**angustiphylla** (Gyelnik) Hale

**arida** Egan & Derstine

**atticoides** (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.: *Neofuscelia atticoides*, *Parmelia atticoides*

**australasica** D. J. Galloway  
**barbatica** (Elix) Egan  
**brunella** (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:  
*Neofuscelia brunella*, *Parmelia brunella*  
**californica** Hale  
**camtschadalis** (Ach.) Hale  
**chiricahuensis** (R. A. Anderson & W. A. Weber) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch  
(Blanco et al. 2004b) Syns.: *Neofuscelia chiricahuensis*, *Parmelia chiricahuensis*  
**chlorochroa** (Tuck.) Hale Syn.: *Parmelia chlorochroa*  
**coloradoënsis** (Gyelnik) Hale  
**commonii** Elix & T. H. Nash (Elix & Nash 1999)  
**consociata** (Elix) Elix & Johnston (Nash et al. 1998)  
**conspersa** (Ehrh. ex Ach.) Hale Syns.: *Parmelia conspersa*, *P. isidiata*  
**cumberlandia** (Gyelnik) Hale Syn.: *Parmelia cumberlandia*  
**dierythra** (Hale) Hale Syn.: *Parmelia dierythra*  
**digitiformis** (Elix & P. M. Armstr.) Filson (Nash & Elix 2004)  
**dissensa** (T. H. Nash) Hale Syn.: *Parmelia dissensa*  
**eganii** Elix & T. H. Nash (Elix & Nash 1999)  
**huachucensis** (T. H. Nash) Egan Syn.: *Parmelia huachucensis*  
**hypofusca** (Gyelnik) Hodgkinson & Lendemer (Hodgkinson & Lendemer 2011)  
**hypomelaena** (Hale) Hale Syn.: *Parmelia hypomelaena*  
**idahoensis** Hale  
**incerta** (Kurok. & Filson) Elix & J. Johnst. (Nash & Elix 2004)  
**infrapallida** (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004) Syns.:  
*Neofuscelia infrapallida*, *Parmelia infrapallida*  
**isidiascens** Hale  
**isidiigera** (Müll. Arg.) Elix & J. Johnst. (Nash & Elix 2004)  
**isidiosa** (Müll. Arg.) Elix & Johnston (Nash et al. 1998)  
**joranadia** (T. H. Nash) Hale Syn.: *Parmelia joranadia*  
**knudsenii** Elix, A. Thell & Söchting (Thell et al. 2009)  
**lavicola** (Gyelnik) Hale Syn.: *Parmelia kurokawae*  
**lineola** (E. C. Berry) Hale Syn.: *Parmelia lineola*  
**lipochlorochroa** Hale & Elix  
**lobulatella** T. H. Nash & Elix (Nash & Elix 2004)  
**loxodes** (Nyl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:  
*Neofuscelia loxodes*, *Parmelia isidiotyla*, *P. loxodes*  
**maricopensis** T. H. Nash & Elix  
**mexicana** (Gyelnik) Hale Syn.: *Parmelia mexicana*  
**moctezumensis** T. H. Nash  
**montanensis** Hale  
**monticola** (J. P. Dey) Hale Syn.: *Parmelia monticola*  
**mougeotii** (Schaerer) Hale Syn.: *Parmelia mougeotii*  
**neochlorochroa** Hale  
**neocongensis** (Hale) Hale (Nash et al. 1998)  
**neoconspersa** (Gyelnik) Hale Syn.: *Parmelia neoconspersa*  
**neorimalis** (Elix & P. M. Armstr.) Elix & T. H. Nash (Nash & Elix 2004)  
**neotaractica** Hale  
**neowyomingica** Hale  
**nigrolavicola** T. H. Nash & Elix (Nash & Elix 2004)  
**nigropsoromifera** (T. H. Nash) Egan Syn.: *Parmelia nigropsoromifera*  
**nigroweberi** T. H. Nash & Elix (Nash & Elix 2004)  
**norchlorochroa** Hale  
**norhypopsila** Hale  
**novomexicana** (Gyelnik) Hale Syns.: *Parmelia novomexicana*, *P. tuberculata*, *P. arseneana*  
**occidentalis** (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:  
*Neofuscelia occidentalis*, *Parmelia occidentalis*

**oleosa** (Elix & P. M. Armstrong) Elix & T. H. Nash  
**piedmontensis** (Hale) Hale Syn.: *Parmelia piedmontensis*  
**planilobata** (Gyelnik) Hale  
**plittii** (Gyelnik) Hale Syn.: *Parmelia plittii*  
**pseudocongensis** Hale (Nash & Elix 2004)  
**psoromifera** (Kurok.) Hale Syn.: *Parmelia psoromifera*  
**pustulosa** (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:  
*Neofuscelia pustulosa*, *Parmelia pustulosa*  
**schmidtii** Hale  
**standaertii** (Gyelnik) Hale (Nash & Elix 2004)  
**stenophylla** (Ach.) Ahti & D. Hawksw. Syn.: *Parmelia stenophylla* (Ahti & Hawksworth 2005)  
**stenophylloides** (Müll. Arg.) Hale  
**subcumberlandia** Elix & T. H. Nash (Nash & Elix 2004)  
**subdeciapiens** (Vainio) Hale Syn.: *Parmelia subdeciapiens*  
**subhosseana** (Essl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:  
*Neofuscelia subhosseana*, *Parmelia subhosseana*  
**subplittii** Hale (Nash & Elix 2004)  
**subramigera** (Gyelnik) Hale Syn.: *Parmelia subramigera*  
**substenophylloides** Hale  
**subtasmanica** Elix & T. H. Nash (Nash & Elix 2004)  
**tegeta** Elix & Johnston (Nash et al. 1998)  
**tinctina** (Maheu & Gillet) Hale (Nash & Elix 2004)  
**tuberculata** (Gyelnik) T. H. Nash & Elix (Nash & Elix 2004)  
**tuckeriana** Elix & T. H. Nash (Nash & Elix 2004)  
**tucsonensis** (T. H. Nash) Egan Syn.: *Parmelia tucsonensis*  
**vagans** (Nyl.) Hale  
**verruculifera** (Nyl.) O. Blanco, A. Crespo, Elix, D. Hawksw. & Lumbsch (Blanco et al. 2004b) Syns.:  
*Neofuscelia verruculifera*, *Parmelia verruculifera*  
**viriduloumbrina** (Gyelnik) Lendemer (Lendemer 2005b)  
**weberi** (Hale) Hale Syn.: *Parmelia weberi*  
**wyomingica** (Gyelnik) Hale Syn.: *Parmelia wyomingica*  
*arseneana* (Gyelnik) Hale = *X. novomexicana*  
*centrifuga* (L.) Hale = *Arctoparmelia centrifuga*  
*congensis* (Stein) Hale Syn.: *Parmelia congensis*, but only known as far north as Mexico  
*hypopsila* (Müll. Arg.) Hale = misidentification for North America; most specimens are *X. angustiphylla*  
*incurva* (Pers.) Hale = *Arctoparmelia incurva*  
*ioanis-simae* (Gyelnik) Hale = *X. taractica*, but see note below  
*kurokawae* (Hale) Hale = *X. lavicola*  
*lecanorica* (Hale) Hale Syn.: *Parmelia lecanorica* Not in North America  
*separata* (Th. Fr.) Hale = *Arctoparmelia separata*  
*somloënsis* (Gyelnik) Hale = *Xanthoparmelia stenophylla*  
*subcentrifuga* (Oxner) Hale = *Arctoparmelia subcentrifuga*  
*subconspersa* (Nyl.) Hale = *Flavoparmelia rutidota*  
*taractica* (Kremp.) Hale = known from Mexico, but misidentification for our area; western N. A. specimens are mostly *X. coloradoensis* and eastern N. A. specimens are mostly *X. viriduloumbrina*  
*tasmanica* (Hooker f. & Taylor) Hale North American reports are *X. hypofusca*  
*tinctina* (Maheu & A. Gillet) Hale Syn.: *Parmelia tinctina* Not in North America

**XANTHOPSORA** Gotth. Schneider & W. A. Weber = **XANTHOPSORELLA**

*texana* (W. A. Weber) Gotth. Schneider & W. A. Weber = *Xanthopsorella texana*

**XANTHOPSORELLA** Kalb & Hafellner

**texana** (W. A. Weber) Kalb & Hafellner Syns.: *Xanthopsora texana*, *Psora texana*, *Lecidea texana*



## **XANTHORIA** (Fr.) Th. Fr.

**parietina** (L.) Th. Fr. Syn.: *Teloschistes parietinus*  
**tibellii** S. Y. Kondr. & Kärnefelt (Kondratyuk & Kärnefelt 2003a)  
*alaskana* J. W. Thomson = *Polycauliona polycarpa* (Lindblom 1997)  
*alfredii* S. Y. Kondr. & Poelt (Kondratyuk & Poelt 1997) = North American report is *Xanthomendoza*  
*montana* (Lindblom 1997)  
*ascendens* S. Y. Kondr. (Lindblom 2004b) = *Polycauliona ascendens*  
*borealis* R. Sant. & Poelt = *Xanthomendoza borealis*  
*candelaria* (L.) Th. Fr. = *Polycauliona candelaria*  
*candelaria* var. *finmarkica* (Ach.) Hillmann = *Polycauliona candelaria*  
*concinna* J. W. Thomson & T. H. Nash = *Xanthomendoza concinna*  
*elegans* (Link) Th. Fr. = *Rusavskia elegans*  
*elegans* var. *splendens* (Darb.) M. S. Christ. ex Poelt = *Rusavskia elegans*  
*fallax* (Hepp ex Arnold) Arnold = *Xanthomendoza fallax*  
*fulva* (Hoffm.) Poelt & Petutschnig (Esslinger & Egan 1995) = *Xanthomendoza fulva*  
*hasseana* Räsänen = *Xanthomendoza hasseana*  
*lobulata* (Flörke) B. de Lesd. = *Calogaya lobulata*  
*mendozae* Räsänen = *Xanthomendoza mendozae*  
*montana* L. Lindblom (Lindblom 1997) = *Xanthomendoza montana*  
*oregana* Gyelnik (Lindblom 1997) = *Xanthomendoza oregana*  
*papillifera* (Vainio) Poelt = *Rusavskia papillifera*  
*pollinarioides* L. Lindblom & D. M. Wright (Lindblom 2004b) = *Polycauliona pollinarioides*  
*polycarpa* (Hoffm.) Th. Fr. ex Rieber = *Polycauliona polycarpa*  
*ramulosa* (Tuck.) Herre = *Polycauliona polycarpa* (Lindblom 1997)  
*sorediata* (Vainio) Poelt = *Rusavskia sorediata*  
*subramulosa* Räsänen = *Xanthomendoza subramulosa*  
*tenax* L. Lindblom (1997) = *Polycauliona tenax*  
*tenuiloba* L. Lindblom (Lindblom 2004b) = *Polycauliona tenuiloba*  
*ulophyllodes* Räsänen = *Xanthomendoza ulophyllodes*  
*weberi* S. Y. Kondr. & Kärnefelt = *Xanthomendoza weberi*  
*wetmorei* S. Y. Kondr. & Kärnefelt (Kondratyuk & Kärnefelt 2003a) = *Xanthomendoza weberi*  
(Knudsen et al. 2011b)

## **XENONECTRIELLA** Weese

\***lutescens** (Arnold) Weese (Zhurbenko 2009a)

## **XEROTREMA** Sherwood & Coppins

<sup>+</sup>**megalospora** Sherwood & Coppins

## **XYLEBORUS** R. C. Harris & Ladd (Harris & Ladd 2007)

**nigricans** R. C. Harris & Lendemer (Lendemer & Harris 2015b)

**sporodochifer** R. C. Harris & Ladd (Harris & Ladd 2007)

## **XYLOGRAPHA** (Fr.) Fr.

**bjoerkii** T. Sprib. (Spribille et al. 2014a)

**carneopallida** (Räsänen) T. Sprib. (Spribille et al. 2014a)

**crassithallia** B. D. Ryan & T. H. Nash (Ryan 2004b) Possibly a synonym of *X. difformis* (Spribille et al. 2014a)

**difformis** (Vainio) Vainio (Spribille et al. 2014a)

**disseminata** Willey

**erratica** T. Sprib. (Spribille et al. 2014a)

**hians** Tuck.

**opegraphella** Nyl.

**pallens** (Nyl.) Harm. (Spribille et al. 2014a)

**parallela** (Ach.: Fr.) Fr.

**rubescens** Räsänen (Spribille et al. 2014a)

**schofieldii** T. Sprib. (Spribille et al. 2014a)  
**septentrionalis** T. Sprib. (Spribille et al. 2014a)  
**soralifera** Holien & Tønsberg (Holien & Tønsberg 2008)  
**stenospora** T. Sprib. & Resl (Spribille et al. 2014a)  
**trunciseda** (Th. Fr.) Minks ex Redinger  
**vermicularis** T. Sprib. (Spribille et al. 2014a)  
**vitiligo** (Ach.) J. R. Laundon  
 abietina (Pers.) Zahlbr. = *X. parallela*  
 micrographa G. Merr. = *X. hians*  
 pruinodisca B. D. Ryan & T. H. Nash (Ryan 2004b) = *X. difformis* (Spribille et al. 2014a)  
 spilomatica (Anzi) Th. Fr. = *X. vitiligo*

**XYLOPSORA** Bendiksby & Timdal (Bendiksby & Timdal 2013)

**friesii** (Ach.) Bendiksby & Timdal Syn.: *Hypocenomyce friesii*, *Lecidea friesii*, *Psora friesii*

**XYLOSCHISTES** Vainio ex Zahlbr

**platytropa** (Nyl.) Vainio (Spribille & Björk 2008)

**ZAHLBRUCKNERELLA** Herre

**calcarea** (Herre) Herre

**californica** Henssen

**fabispora** Henssen

**ZAMENHOFIA** Clauzade & Cl. Roux = **PORINA**

*hibernica* (P. James & Swinscow) Clauzade & Cl. Roux = *Porina hibernica*

**ZWACKHIA** Körber

**viridis** (Pers. ex Ach.) Poetsch & Schied. (Ertz & Tehler 2011) Syn.: *Opegrapha viridis*

**ZWACKHIOMYCES** Grube & Hafellner

\***arenicola** R. C. Harris (Harris 1995a)

\***berengerianus** (Arnold) Grube & Triebel

\***cladoniae** (C. W. Dodge) Diederich (Alstrup & Cole 1998)

\***coepulonus** (Norman) Grube & R. Sant. (Goward et al. 1996)

\***dispersus** (J. Lahm ex Körber) Triebel & Grube Syn.: *Pharcidia dispersa*

\***euplocinus** Hafellner, Grube & Egan

\***macrosporus** Alstrup & Olech (Zhurbenko 2013)

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#### APPENDIX – SPECIMEN CITATIONS

**Bryophagus gloeocapsa** Nitschke ex Arnold – U.S.A. Michigan. Cheboygan Co.: just N of Cheboygan Levering Rd. W of its intersection with Interstate 75; 45deg. 38' N, 84deg. 39' W; on terricolous bryophytes, J. Hafellner 7998 (GZU).

**Pyrenopsis portoricensis** Zahlbr. – U.S.A. North Carolina. Anson Co.: *Perlmutter 1827* (NCU); Wake Co.: *Perlmutter 1899* (NCU); Georgia. Columbia Co.: *Perlmutter 1644* (NCU). New to North America (communicated G. Perlmutter; specimens identified by Matthias Schultz).

**Thelotrema circumscriptum** C. Knight – U.S.A. Oregon. Lincoln Co.: Ona Beach State Park, 8 mi. S of Newport, Sitka spruce & pines at shore, 20.8.1975, C. M. Wetmore 24624 (MIN). New to Northern Hemisphere (communicated T. Lumbsch).